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GLOBAL DATA MONITORING REPORT

January, 1996

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis. The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIBU observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At RSMC Bracknell, for synoptic stations at or below a height of 500 metres, reported mean sea-level pressure is used in the statistics. If this is unavailable the mean sea-level pressure is calculated from the reported station-level pressure and temperature.

For synoptic stations above 500 metres, the mean sea-level pressure is calculated from the reported station-level pressure and temperature, or, if these are not available the height of a standard pressure-level (e.g.: 850 hPa or 700 hPa). If neither of these are available, the reported mean sea-level pressure is used.

Some stations vary their reporting practice according to the observation hour (e.g.: some stations in the CIS report both mean sea-level and station-level pressure at 00 & 12 UTC, but only mean sea-level pressure at 06 & 18 UTC). For monitoring purposes, reported mean sea-level pressure is stored separately from that calculated from station-level pressure or height of a standard pressure-level. Only statistics for the preferred method (see above) are presented in this report, and so for certain high-level stations, such as those from the CIS, approximately half of the number of observations actually received will appear in the statistics.

Aircraft observations

TABLE 4 contains a list of statistics calculated from data received from all airline carriers.

Figure 3 shows 10 degree lat/long box average numbers of AIREP/ASDAR reports received per day throughout the month at Bracknell and assimilated into model runs in the layer 70-500 hPa. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4-7 show wind statistics for AIREP/ASDAR in the layer 70-500 hPa. Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX 1 shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-27 show satellite mean observation-background temperature differences for NOAA-12 soundings at 500 km resolution and figures 28-30 show the same statistics for NOAA-14. Data are plotted where there are > 30 observations in a 10 degree lat/long box.

Figure	Layer (hPa)
25/28	850-1000
26/29	100-300
27/30	30-50

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area
10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

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Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: January, 1996

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from Bracknell global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).
:Wind speed ($m\ s^{-1}$).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 $m\ s^{-1}$ (vector wind)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.$\lvert$bias$\rvert$	$\geq$ 4 hPa	(pressure),
	$\geq$ 5 $m\ s^{-1}$	(wind speed),
	$\geq$ 30 degrees	(direction).
2.SD	$\geq$ 6 hPa	(pressure),
	$\geq$ 80 degrees	(direction).
3.PGE	$\geq$ 25	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
C6BO9	ALL	MSLP	SUR	32	1	3	2.2	-10.7	10.9
C6FA6	ALL	MSLP	SUR	42	0	0	1.0	-6.2	6.3
C6IL3	ALL	MSLP	SUR	25	0	0	2.4	7.5	7.9
C6MU6	ALL	MSLP	SUR	42	1	2	5.3	-6.9	8.7
D5NE	ALL	MSLP	SUR	54	0	0	3.2	5.1	6.0
ELIU2	ALL	MSLP	SUR	27	0	0	1.3	4.3	4.5
ELNG6	ALL	MSLP	SUR	48	15	31	1.0	-13.2	13.3
ELQF4	ALL	MSLP	SUR	24	0	0	1.2	-4.8	4.9
INTERBER	ALL	MSLP	SUR	23	0	0	1.2	-5.5	5.6
LACF4	ALL	MSLP	SUR	50	1	2	2.3	-5.3	5.8
OXWJ2	ALL	MSLP	SUR	39	2	5	2.1	8.4	8.7
OZBL2	ALL	MSLP	SUR	62	0	0	1.0	8.3	8.3
PJRH	ALL	MSLP	SUR	41	0	0	1.3	4.1	4.3
P3AL4	ALL	MSLP	SUR	25	0	0	1.6	8.6	8.8
P3XM4	ALL	MSLP	SUR	61	1	2	1.5	-5.4	5.6
TFLE	ALL	MSLP	SUR	40	0	0	2.0	-5.6	5.9
UJJR	ALL	MSLP	SUR	33	2	6	4.2	-5.2	6.6
UKGT	ALL	MSLP	SUR	35	0	0	1.3	-11.5	11.5
URTY	ALL	MSLP	SUR	26	0	0	4.1	5.4	6.8
WPPO	ALL	MSLP	SUR	44	0	0	1.2	4.4	4.6
WXQ4511	ALL	MSLP	SUR	35	0	0	3.2	-4.2	5.3
ZSPP	ALL	MSLP	SUR	37	0	0	0.8	-5.1	5.2
3EAY5	ALL	MSLP	SUR	28	0	0	1.5	-6.3	6.4
62106	ALL	MSLP	SUR	63	1	2	5.7	-4.2	7.0
9MBR8	ALL	MSLP	SUR	41	0	0	4.8	4.3	6.4
WIND SPEED									
DQEU	ALL	SPEED	SUR	30	1	3	7.7	5.9	9.7
DVFS	ALL	SPEED	SUR	40	0	0	3.3	-5.4	6.3
D5ND	ALL	SPEED	SUR	28	0	0	2.4	-5.1	5.6
D9SF	ALL	SPEED	SUR	20	0	0	2.3	5.6	6.1
ELAX2	ALL	SPEED	SUR	44	0	0	2.9	5.2	5.9
ELBP9	ALL	SPEED	SUR	26	1	4	5.6	5.6	8.0
ELRY4	ALL	SPEED	SUR	55	1	2	2.8	5.8	6.5
FNWV	ALL	SPEED	SUR	31	0	0	6.1	8.2	10.3
GBCF	ALL	SPEED	SUR	57	2	4	8.2	8.5	11.8
GHMA	ALL	SPEED	SUR	33	0	0	3.2	-6.4	7.2
LAEC2	ALL	SPEED	SUR	21	0	0	2.9	5.0	5.8
LAHV	ALL	SPEED	SUR	62	1	2	7.3	5.7	9.3
LXAP	ALL	SPEED	SUR	52	0	0	3.8	7.5	8.4
MSBM4	ALL	SPEED	SUR	54	0	0	5.5	5.6	7.9
OZIA	ALL	SPEED	SUR	34	0	0	4.0	5.0	6.4
P3XM4	ALL	SPEED	SUR	51	0	0	3.6	6.7	7.6
VJBE	ALL	SPEED	SUR	21	0	0	4.4	5.0	6.6
VNAE	ALL	SPEED	SUR	31	1	3	4.6	9.4	10.5
VRUU9	ALL	SPEED	SUR	20	0	0	3.2	5.4	6.2
3FAQ3	ALL	SPEED	SUR	31	0	0	3.2	5.8	6.6
3FHE4	ALL	SPEED	SUR	46	0	0	3.8	6.4	7.5
4PKM	ALL	SPEED	SUR	33	0	0	4.1	7.0	8.2
4QUL	ALL	SPEED	SUR	33	0	0	6.8	10.2	12.3
4XGT	ALL	SPEED	SUR	40	0	0	6.2	5.2	8.1
62115	ALL	SPEED	SUR	21	0	0	2.0	5.3	5.6
9KKL	ALL	SPEED	SUR	30	2	7	7.1	6.8	9.8
9MBW7	ALL	SPEED	SUR	33	2	6	6.0	8.8	10.7
WIND DIRECTION									
CG2614	ALL	DIRN.	SUR	66	0	0	34.0	33.3	47.6
LAXQ2	ALL	DIRN.	SUR	72	0	0	38.4	-30.6	49.1
32303	ALL	DIRN.	SUR	41	0	0	93.6	-5.8	93.8
43001	ALL	DIRN.	SUR	65	0	0	59.7	-42.7	73.4
46053	ALL	DIRN.	SUR	45	0	0	39.4	-49.2	63.0

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND DIRECTION									
46054	ALL	DIRN.	SUR	69	0	0	23.2	-31.1	38.8
46061	ALL	DIRN.	SUR	86	0	0	81.7	-35.7	89.2
46131	ALL	DIRN.	SUR	87	0	0	53.1	-42.1	67.8
62122	ALL	DIRN.	SUR	52	3	6	64.2	-121.0	137.0
63113	ALL	DIRN.	SUR	40	0	0	84.7	-22.1	87.5

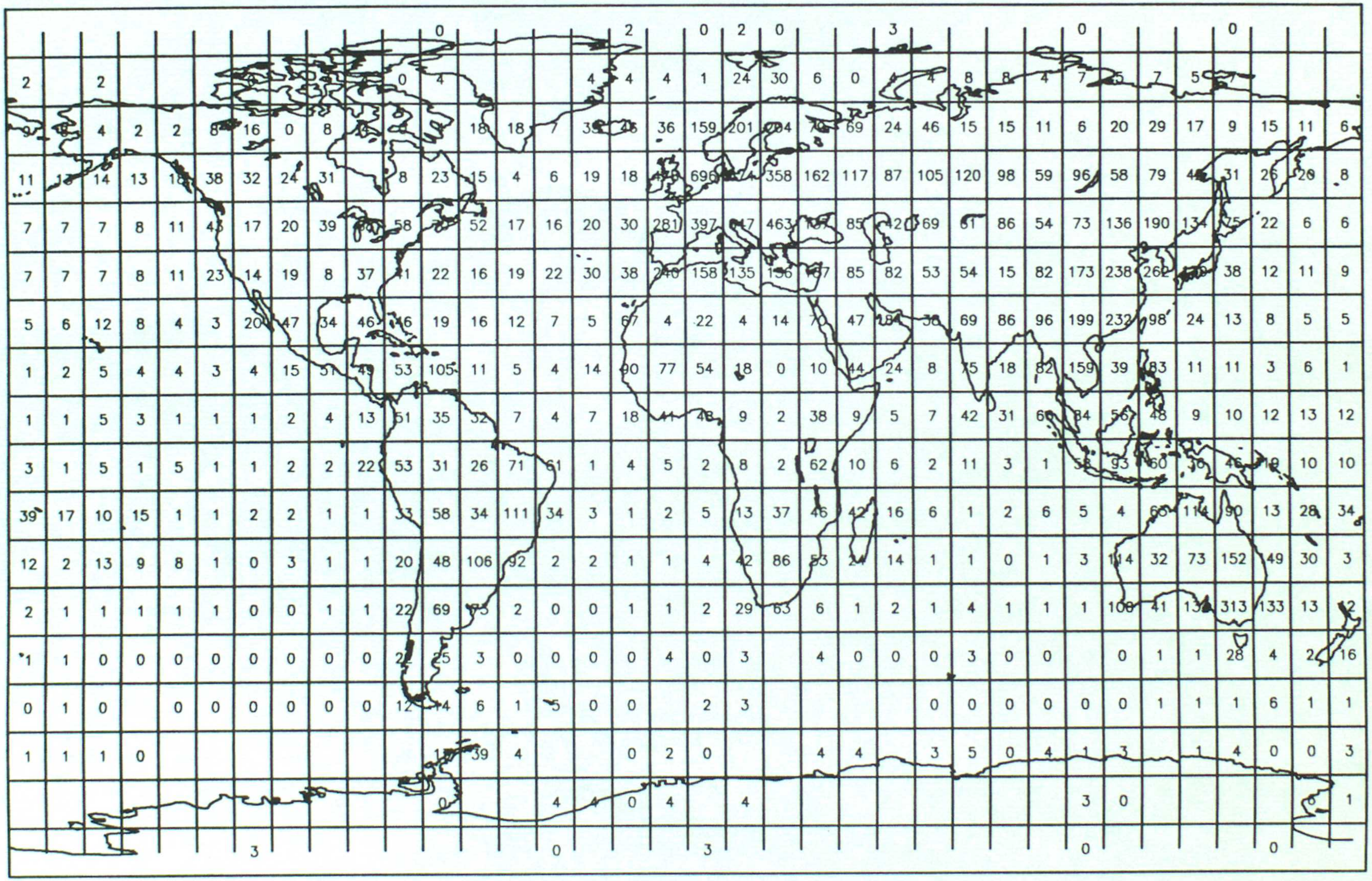
AVAILABILITY – SHIP/SYNOP – JANUARY 1996

FIGURE 1

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 18235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3 1 5 1 5 1 1 2 2 22 53 31 26 71 61 1 4 5 2 8 2 62 10 6 2 11 3 1 93 60 46 10 10
39 17 10 15 1 1 2 2 1 1 33 58 34 111 34 3 1 2 5 13 37 46 42 16 6 1 2 6 5 4 114 90 13 28 34
12 2 13 9 8 1 0 3 1 1 20 48 106 92 2 2 1 1 4 42 86 53 14 1 1 0 1 3 114 32 73 152 149 30 3
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0 1 0 0 0 0 0 0 0 12 14 6 1 5 0 0 2 3 0 0 0 0 0 0 1 1 1 6 1 1
1 1 1 0 39 4 0 2 0 4 4 3 5 0 4 1 3 1 4 0 0 3
0 4 4 0 4 4 3 0 1
3 0 3 0 0

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: January, 1996

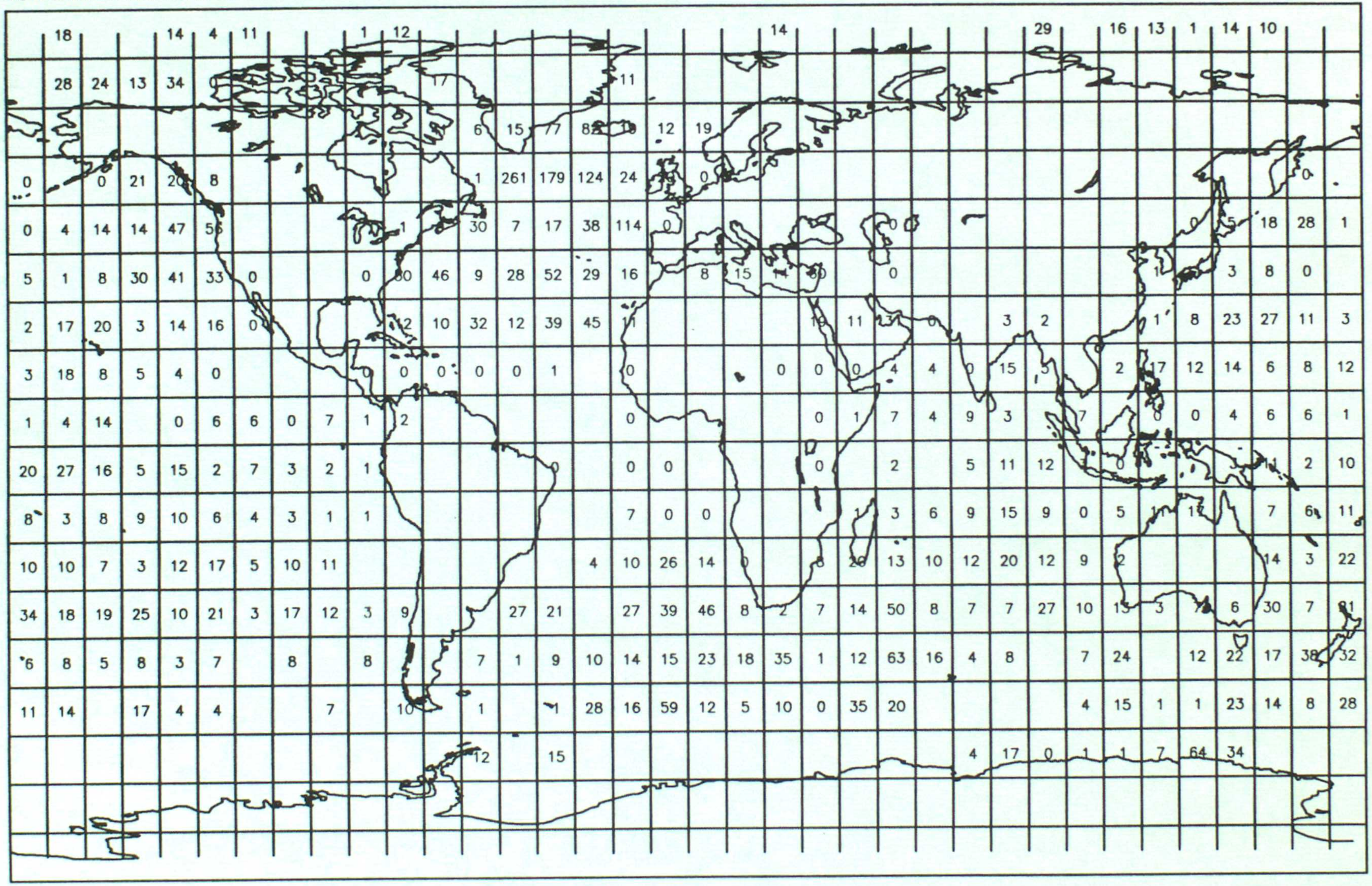
Monitoring procedures			
Period		:One calendar month.	
Data monitored		:Reports from each unique identifier for drifting buoys.	
Standard of comparison		:Background field from Bracknell global model.	
Position		:Average latitude and longitude for period.	
Observation times		:00, 06, 12, 18 UTC	
Elements monitored		:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees).	
Parameters monitored	:NOBS	:Number of observations received excluding duplicates.	
	:NGE	:Number of observations with gross errors.	
	:PGE	:Percentage of observations with gross errors.	
	:SD	:SD of difference of observations from background values excluding those with gross errors.	
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**	
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.	
GROSS ERROR LIMIT	:15 hPa	(pressure)	
	:25 m s^{-1}	(vector wind)	
SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.¦bias¦	≥ 4 hPa	(pressure),
		≥ 5 m s^{-1}	(wind speed),
		≥ 30 degrees	(direction).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

```
IDENTIFIER  LAT.  LONG.  HOUR  ELEM   LEVEL NOBS  NGE  PGE     SD    BIAS    RMS

MEAN SEA LEVEL PRESSURE

17603      -27.2   -4.3  ALL   MSLP    SUR   514  138   27    4.5     7.6    8.8
17604      -30.7    2.1  ALL   MSLP    SUR   132  132  100    0.0     0.0    0.0
17607      -43.8   53.8  ALL   MSLP    SUR   686  269   39    4.3     8.2    9.3
17608      -43.3   21.1  ALL   MSLP    SUR   265  211   80    2.6    11.8   12.1
17613      -55.3   49.4  ALL   MSLP    SUR   896   66    7    6.3     0.7    6.4

17901      -48.3   26.1  ALL   MSLP    SUR   280  132   47    3.3    -4.3    5.5
21532       40.9  159.9  ALL   MSLP    SUR    42   13   31    2.3    -1.4    2.7
23924       16.8   89.9  ALL   MSLP    SUR    29   29  100    0.0     0.0    0.0
33540      -42.6   26.0  ALL   MSLP    SUR   146  146  100    0.0     0.0    0.0
33900      -51.8  -28.1  ALL   MSLP    SUR   329    0    0    3.3    -4.6    5.7

33944      -51.3   -7.6  ALL   MSLP    SUR    46   10   22    3.3    -9.4   10.0
33949      -48.4  -53.2  ALL   MSLP    SUR    42   38   90    0.4   -13.5   13.5
46921       41.3 -128.9  ALL   MSLP    SUR    44    2    5    2.8   -10.2   10.6
46928       45.3 -129.6  ALL   MSLP    SUR    39    0    0    1.6    -8.7    8.8

WIND SPEED

44616       58.8  -32.0  ALL   SPEED   SUR   222    0    0    4.9    -7.8    9.2
52656        7.3  151.6  ALL   SPEED   SUR    38    0    0    1.2    -6.6    6.7

WIND DIRECTION

21529       22.7  144.4  ALL   DIRN.   SUR   172    0    0   47.9    31.6   57.4
44616       58.8  -32.0  ALL   DIRN.   SUR   177    0    0  104.0   -38.3  110.8
46557       38.6 -150.5  ALL   DIRN.   SUR   200    0    0   28.0   -30.9   41.7
```

AVAILABILITY – DRIBU – JANUARY 1996
MAIN HOURS ONLY
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 4791

FIGURE 2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6 15 77 82 10 12 19
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0 4 14 14 47 56 1 30 7 17 38 114 0 0 0 5 18 28 1
5 1 8 30 41 33 0 0 30 46 9 28 52 29 16 8 15 14 30 0 1 3 8 0
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3 18 8 5 4 0 0 0 0 0 0 1 0 0 0 0 4 4 0 15 5 2 17 12 14 6 8 12
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8 3 8 9 10 6 4 3 1 1 7 0 0 1 3 6 9 15 9 0 5 1 17 7 6 11
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34 18 19 25 10 21 3 17 12 3 9 27 21 27 39 46 8 2 7 14 50 8 7 7 27 10 13 3 7 6 30 7 31
6 8 5 8 3 7 8 8 7 1 9 10 14 15 23 18 35 1 12 63 16 4 8 7 24 12 22 17 38 32
11 14 17 4 4 7 10 1 1 28 16 59 12 5 10 0 35 20 4 15 1 1 23 14 8 28
12 15 4 17 0 1 1 7 64 34

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: January, 1996

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for synops & autosynops.

Standard of comparison :Background field from Bracknell global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).

Parameters monitored :HT(m) :Station height (in metres) as given in WMO No. 9 Vol A

:RP :Pressure reporting practice
M=mean sea level pressure (hPa) reported.
S=Station level pressure reported.
8=Geopotential height (m) of 850 hPa surface reported.
7=Geopotential height (m) of 700 hPa surface reported.

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:%REJ :Percentage of observations flagged.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)

SELECTION CRITERIA :NOBS ≥ 20 ,and one or more of the following:

1.¦bias¦ ≥ 4 hPa
2. SD ≥ 6 hPa
3.PGE ≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60106	35.1N	5.3E	305	M	89	2	2	56	6.4	0.2	6.4
60445	36.2N	5.4E	1081	S8	110	1	1	93	1.0	4.6	4.7
60468	35.6N	6.2E	1052	S8	78	78	100	0	0.0	0.0	0.0
60511	35.3N	1.4E	1127	S8	112	111	99	0	0.0	13.2	13.2
60535	34.7N	3.3E	1144	S8	58	2	3	59	1.0	-6.7	6.8
60571	31.6N	2.2W	773	S8	107	1	1	31	1.0	-4.9	5.0
60670	24.6N	9.5E	1054	S8	106	2	2	96	1.5	8.3	8.4
63333	11.1N	39.7E	1916	MS	65	0	0	82	0.9	7.5	7.6
63453	8.8N	39.8E	1062	S	46	0	0	100	1.3	12.6	12.7
63478	5.1N	44.6E	320	MS	35	0	0	0	1.7	6.8	7.0
67877	18.2S	31.5E	1632	S8	55	22	40	100	1.8	12.8	12.9
68014	19.6S	18.1E	1411	S8	86	0	0	53	1.7	-5.2	5.5
68396	26.5S	31.3E	641	S8	42	0	0	64	1.8	4.5	4.8
68442	29.1S	26.3E	1354	S8	120	0	0	84	1.2	-4.7	4.9
68752	32.8S	27.4E	524	S8	81	0	0	100	1.1	-7.1	7.2

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
24382	66.4N	143.2E	196	MS	61	3	5	66	4.1	7.8	8.8
24671	63.9N	135.9E	402	MS	79	19	24	6	2.6	12.0	12.3
24688	63.3N	143.2E	741	MS	57	3	5	12	2.4	4.2	4.8
25703	62.9N	152.4E	205	MS	117	0	0	12	2.2	4.3	4.8
29759	54.3N	89.3E	847	MS	81	3	4	53	1.7	-4.3	4.6
30385	56.6N	121.5E	426	MS	116	1	1	42	4.6	4.2	6.2
30549	54.2N	112.0E	1302	S8	60	2	3	30	3.6	-4.1	5.5
30554	54.5N	113.6E	995	MS	60	0	0	100	1.3	9.9	10.0
30627	53.1N	105.5E	762	MS	50	1	2	38	2.2	-4.3	4.8
30764	52.6N	115.2E	646	MS	54	0	0	0	1.2	-4.4	4.6
31474	51.6N	133.3E	384	MS	108	0	0	39	3.4	5.5	6.5
38954	37.5N	71.5E	2077	7	36	3	8	31	3.5	5.7	6.7
40701	39.3N	44.4E	1470	MS	78	2	3	96	1.2	8.7	8.8
40710	37.9N	47.5E	-9999	M	79	0	0	13	3.1	5.2	6.1
40743	36.2N	57.7E	941	MS	116	0	0	17	1.1	-4.2	4.3
40762	35.3N	59.2E	1333	MS	111	35	32	0	0.9	-13.6	13.6
40763	35.2N	58.5E	1060	MS	42	0	0	29	2.9	-4.8	5.6
40783	32.4N	49.7E	1972	M	83	1	1	60	1.7	-5.7	5.9
40789	33.8N	55.1E	921	MS	60	3	5	95	1.7	9.5	9.7
40836	30.8N	51.7E	1880	MS	72	5	7	96	1.5	9.9	10.0
40859	29.0N	53.7E	1383	MS	81	4	5	96	1.4	10.2	10.3
41244	24.2N	55.8E	299	M	116	1	1	1	1.4	7.5	7.6
41254	23.1N	57.7E	1755	S8	87	87	100	0	0.0	0.0	0.0
41396	16.0N	48.9E	700	MS	27	0	0	96	1.4	7.8	7.9
44212	49.8N	92.1E	936	MS	94	4	4	40	4.0	5.7	7.0
44232	49.4N	102.7E	933	MS	85	2	2	25	2.1	-4.2	4.7
44275	46.8N	98.1E	2255	MS	88	2	2	23	3.0	-4.0	5.0
44277	46.4N	96.3E	2147	MS	91	1	1	48	1.6	-7.3	7.5
44292	47.9N	107.0E	1338	MS	96	0	0	72	1.2	4.6	4.8
44416	28.6N	81.6E	720	MS	85	0	0	35	2.1	4.6	5.1
44477	27.0N	87.4E	1445	S8	72	72	100	0	0.0	0.0	0.0
47020	41.0N	126.6E	306	M	113	0	0	4	3.2	4.1	5.2
47022	40.8N	128.2E	1206	S	110	1	1	25	2.0	4.8	5.2
51288	45.4N	90.5E	1651	S	121	0	0	38	1.9	-4.4	4.8
51334	44.6N	82.9E	321	M	121	16	13	12	2.9	9.6	10.0
51379	44.0N	89.6E	794	M	122	0	0	38	2.5	7.2	7.6
51495	43.5N	91.6E	874	M	123	1	1	7	3.0	4.6	5.5
51818	37.6N	78.3E	1376	M	120	0	0	18	3.6	6.0	7.0
52378	41.4N	102.4E	960	M	121	0	0	38	2.7	6.3	6.9
52602	38.8N	93.4E	2734	S	123	0	0	2	2.4	-5.5	6.0
53083	44.6N	114.2E	1183	M	123	2	2	80	3.4	7.1	7.9

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
53352	41.7N	110.4E	1377	M	123	0	0	32	3.6	6.9	7.8
53480	41.0N	113.1E	1416	M	122	0	0	27	3.8	5.3	6.5
53487	40.1N	113.3E	1069	M	122	1	1	12	3.5	5.1	6.2
53502	39.8N	105.8E	1033	M	121	1	1	18	3.3	6.1	6.9
53593	39.8N	114.6E	910	M	123	0	0	11	3.5	4.7	5.9
53705	37.5N	105.7E	1185	M	123	0	0	24	3.0	6.0	6.7
53764	37.5N	111.1E	951	M	123	1	1	9	2.7	4.2	5.0
54374	41.7N	126.9E	333	MS	124	0	0	2	3.0	4.1	5.1
54386	41.4N	128.2E	1018	M	121	1	1	12	3.7	6.4	7.4
56287	30.0N	103.0E	629	M	123	0	0	10	2.5	5.7	6.2
56385	29.5N	103.3E	3049	S	122	0	0	28	1.8	-4.8	5.1
56444	28.5N	98.9E	3488	S	123	123	100	0	0.0	0.0	0.0
56462	29.0N	101.5E	2994	S	106	1	1	92	3.1	7.7	8.3
57006	34.6N	105.8E	1143	M	124	0	0	5	2.6	6.0	6.5
58445	30.3N	119.4E	1494	S	105	1	1	44	1.9	-4.8	5.2

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	M	42	1	2	0	1.1	-5.8	5.9
82704	7.6S	72.7W	170	MS	75	0	0	1	2.7	-4.1	4.9
83214	10.3S	54.9W	285	MS	49	0	0	0	1.7	-5.2	5.5
83235	12.4S	46.4W	660	MS	78	1	1	92	1.6	7.0	7.2
83295	13.4S	39.9W	755	MS	44	0	0	70	0.8	-4.9	5.0
83319	14.7S	52.4W	315	MS	61	0	0	0	1.8	-4.2	4.6
83332	14.1S	46.4W	950	MS	76	31	41	0	1.2	13.4	13.5
83408	14.3S	43.8W	556	MS	70	0	0	100	1.5	11.8	11.9
83423	16.7S	49.3W	729	MS	79	0	0	66	1.6	-5.0	5.2
83488	17.8S	42.9W	1097	MS	68	68	100	0	0.0	0.0	0.0
83531	18.6S	46.5W	896	MS	69	1	1	67	1.4	-6.4	6.6
83587	19.9S	43.9W	850	MS	77	0	0	91	1.2	-7.7	7.8
83611	20.4S	54.6W	560	MS	64	0	0	8	1.7	4.2	4.5
83689	21.3S	43.8W	1171	MS	52	0	0	94	1.0	5.0	5.1
83836	25.5S	50.6W	837	M	84	0	0	33	1.8	-4.1	4.5
83916	28.2S	51.5W	806	MS	79	1	1	46	1.2	-4.7	4.9
84455	6.5S	76.4W	282	MS	116	0	0	11	2.2	6.2	6.6
84472	7.1S	78.5W	2622	S	40	2	5	83	1.3	-5.6	5.7
84542	9.4S	77.6W	2760	S	49	1	2	16	1.9	5.8	6.1
84686	13.6S	72.0W	3249	S	121	1	1	2	1.8	-5.6	5.9
84782	18.1S	70.3W	469	MS	118	2	2	5	1.9	6.4	6.7
85312	19.8S	63.9W	992	S	40	2	5	95	2.1	-6.7	7.0

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71421	51.9N	63.3W	561	MS	115	0	0	46	2.3	-4.7	5.2
71499	63.2N	101.8W	237	M	36	1	3	72	4.9	8.4	9.7
71505	60.8N	137.6W	599	MS	124	15	12	15	2.8	6.7	7.3
71882	51.0N	118.2W	443	MS	123	3	2	25	3.6	4.1	5.5
71887	50.7N	120.5W	346	MS	120	1	1	4	3.0	4.5	5.4
71891	50.2N	121.6W	229	MS	123	2	2	13	4.0	4.7	6.2
71917	80.0N	85.9W	10	MS	123	6	5	28	2.7	8.6	9.0
71958	58.4N	130.0W	816	MS	22	0	0	5	2.3	4.9	5.4
71967	61.4N	139.1W	801	MS	124	0	0	6	2.6	4.3	5.0
76118	30.4N	109.7W	1040	MS	34	0	0	100	1.2	-10.0	10.1
76539	22.1N	101.0W	1871	MS	76	0	0	68	1.1	-4.5	4.6
76632	20.1N	98.7W	2417	MS	33	0	0	73	1.0	-5.7	5.8
76634	20.1N	98.4W	2135	MS	76	1	1	70	1.6	-5.3	5.5
76658	19.2N	103.7W	494	MS	27	0	0	0	1.3	6.4	6.5

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
76726	18.9N	99.3W	1560	MS	61	1	2	100	1.3	-6.8	6.9
76750	18.5N	88.3W	3	MS	82	0	0	0	1.1	-4.0	4.1
76762	17.5N	99.5W	1360	MS	57	1	2	100	1.3	11.3	11.4
76848	16.3N	92.1W	1530	MS	87	10	11	21	2.2	-13.4	13.6

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
94595	28.6S	153.6E	98	MS	44	1	2	82	2.5	-5.3	5.9

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01245	62.6N	9.7E	630	MS	89	0	0	100	1.1	-5.9	6.0
01367	61.0N	9.2E	365	MS	124	0	0	27	1.4	4.5	4.7
01372	60.6N	9.1E	167	MS	90	0	0	18	1.7	4.2	4.5
01474	59.9N	9.5E	294	MS	91	1	1	36	1.7	4.5	4.8
06760	46.2N	8.8E	380	MS	124	0	0	2	3.0	4.0	5.0
06762	46.2N	8.9E	198	MS	123	0	0	1	3.0	4.6	5.5
08221	40.5N	3.6W	633	MS	120	1	1	99	1.1	6.3	6.4
10453	51.8N	10.6E	1153	S8	121	0	0	70	1.7	-4.3	4.6
10578	50.4N	13.0E	1215	S8	124	0	0	69	1.5	-4.7	4.9
10791	49.1N	13.1E	1446	S8	93	0	0	96	1.5	-5.0	5.2
11024	48.4N	15.4E	860	S8	122	118	97	0	0.2	-14.5	14.5
11078	48.0N	15.6E	681	MS	122	0	0	16	1.6	-4.8	5.1
11150	47.8N	13.0E	450	MS	124	0	0	32	1.6	4.1	4.4
11155	47.8N	13.7E	1621	S8	123	0	0	46	1.4	-4.3	4.5
11180	47.7N	15.8E	1546	S8	121	0	0	85	1.7	-6.4	6.6
11213	46.6N	13.9E	495	MS	118	0	0	65	1.9	5.0	5.3
11231	46.6N	14.3E	476	MS	124	0	0	71	1.7	4.8	5.1
11241	47.2N	15.5E	1438	S8	38	0	0	11	1.1	-4.6	4.7
11255	46.7N	13.0E	706	MS	123	0	0	33	1.8	5.5	5.8
11360	47.5N	14.1E	710	MS	62	0	0	68	1.3	4.2	4.4
11384	47.6N	15.8E	1323	S8	121	0	0	53	1.6	-5.3	5.5
11735	50.1N	17.2E	1512	S8	124	0	0	94	1.7	-6.2	6.4
11787	49.6N	18.4E	1327	S8	121	0	0	81	1.9	-4.6	5.0
11916	49.0N	19.6E	2012	S8	123	0	0	31	1.7	-4.5	4.8
12510	50.7N	15.7E	1613	8	124	1	1	91	1.7	-5.8	6.0
12851	47.9N	20.0E	1015	S	123	0	0	21	1.1	-4.1	4.2
13289	44.1N	21.9E	1039	8	114	0	0	88	1.8	-4.4	4.8
13369	43.3N	20.0E	1039	8	113	1	1	89	1.2	-4.2	4.4
15052	47.4N	25.6E	1574	S8	120	4	3	59	1.8	-4.6	4.9
15280	45.4N	25.4E	2509	S7	111	2	2	52	2.4	-4.9	5.5
16020	46.5N	11.3E	1461	MS	60	60	100	0	0.0	0.0	0.0
16134	44.2N	10.7E	2173	S8	119	2	2	35	1.8	-5.0	5.3
16614	40.4N	21.3E	604	MS	120	0	0	99	1.3	-7.0	7.1

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89208	90.0S	0.0W	2835	S7	69	69	100	0	0.0	0.0	0.0
89266	72.2S	60.3W	91	MS	60	59	98	0	0.0	-2.6	2.6
89705	81.5S	3.7E	2410	S7	27	27	100	0	0.0	0.0	0.0
89757	73.8S	55.7E	2775	S7	100	100	100	0	0.0	0.0	0.0
89803	68.5S	102.2E	2118	S7	24	0	0	88	4.9	-9.1	10.3
89811	66.7S	112.9E	1362	S8	51	51	100	0	0.0	0.0	0.0
89847	67.6S	146.0E	30	MS	73	0	0	62	2.8	-7.3	7.8
89860	74.2S	160.3E	1772	S8	67	0	0	31	1.9	-7.2	7.4
89863	74.9S	163.1E	30	MS	68	0	0	16	3.6	-5.0	6.2
89865	76.2S	168.7E	275	MS	63	63	100	19	0.0	0.0	0.0

TABLE 4

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: January, 1996

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :70.0 - 500.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	127	0	3	2.5	1.8	127	0	3	1	7.2	0.6
AAH	22	27	18	3.1	0.6	22	0	9	0	11.9	0.3
AAL	5027	0	1	2.0	0.2	5058	0	2	0	8.6	1.0
AAN	128	0	2	1.8	-0.7	121	0	3	0	9.2	-0.9
AAR	2370	1	2	2.0	-0.1	2375	0	2	0	8.5	1.1
ACA	1129	1	2	2.1	0.1	1161	0	2	0	7.9	1.0
ACI	22	0	0	1.3	0.5	22	0	5	0	8.1	0.9
AEA	498	5	100	4.6	2.5	489	0	5	0	11.2	1.8
AEL	1059	1	3	2.0	0.1	1077	0	4	0	10.0	1.2
AFL	162	2	100	2.5	1.2	167	0	4	1	9.8	1.5
AFR	1467	1	4	2.0	-0.1	1490	0	6	1	9.1	1.1
AIC	46	7	11	2.7	-1.4	44	0	9	0	12.1	3.0
AIH	87	0	1	1.6	-0.1	87	0	3	0	9.8	0.7
ALW	20	0	5	1.2	-0.4	20	5	10	0	4.2	2.2
AMT	392	1	3	2.1	0.5	397	0	4	0	9.3	0.8
AMX	175	1	5	2.1	-0.2	177	1	5	0	10.1	0.0
AMY	176	0	1	2.1	-0.8	178	0	3	1	9.6	1.0
ANA	992	1	2	2.1	-0.4	990	0	2	0	9.1	1.0
ANG	23	0	0	1.0	0.1	22	0	0	0	6.8	2.8
ANZ	2730	1	4	1.9	-0.1	2726	0	3	1	8.3	1.7
AOM	673	1	4	2.0	0.7	683	0	4	0	10.0	1.3
ARP	51	2	8	2.5	1.4	46	0	4	0	7.6	3.8
ATN	49	0	0	2.5	-1.3	48	0	88	0	13.6	1.3
AUA	62	2	18	2.4	0.1	62	0	13	0	8.7	2.3
AVA	352	2	5	2.2	0.5	351	0	5	0	11.5	0.9
AVN	49	0	0	1.3	-0.1	49	0	0	0	6.0	1.2
AZA	398	1	5	2.3	0.5	397	0	5	0	9.6	1.1
BAL	371	1	12	2.0	-0.2	386	0	12	0	9.5	0.8
BAW	1726	0	3	2.0	0.1	1731	0	4	0	8.7	1.3
BBB	27	0	4	1.6	0.1	27	7	11	0	9.8	0.4
BWA	447	1	3	2.3	1.2	454	0	5	0	10.1	1.7
CAL	1799	0	2	2.5	-0.3	1801	0	2	0	9.1	0.9
CCA	219	2	11	3.0	0.3	221	0	95	0	12.7	0.6
CDN	2642	0	1	2.1	0.3	2666	0	2	0	8.7	1.1
CES	164	0	3	2.4	0.5	164	0	90	0	9.7	-0.6
CFG	1152	0	3	2.2	-0.8	1165	0	3	0	9.6	0.5
CKS	80	0	75	2.2	1.0	80	1	78	3	7.1	0.9
CKT	61	2	11	2.3	0.2	62	0	13	0	10.6	0.9
CLX	122	1	2	1.9	-0.9	122	0	2	0	8.7	1.0
CMI	1177	1	4	2.3	0.3	1190	0	3	0	9.3	1.0
CMM	338	0	2	2.1	-0.4	339	0	2	0	11.1	1.9
COA	734	0	3	2.1	0.4	736	0	3	0	8.8	0.7
CPA	59	0	3	2.7	-0.1	59	0	8	0	13.2	1.3
CRL	514	1	4	2.4	0.6	526	0	4	1	10.0	1.5
CSA	31	0	0	1.6	-0.5	33	0	0	0	6.3	0.3
CTM	113	1	18	2.7	-1.6	114	0	18	0	8.9	1.1
CUB	391	1	100	2.6	1.5	398	1	100	0	12.8	2.3
DAF	31	0	0	1.7	-0.5	31	0	0	0	6.3	0.3
DAL	4874	1	3	2.2	0.6	4590	0	2	0	8.3	1.0
DHL	466	2	100	3.7	-1.7	464	0	2	0	8.4	0.5
DLH	2710	1	8	2.3	0.6	2746	0	10	2	8.1	1.0
DOA	279	0	12	2.1	0.5	265	2	14	0	9.9	1.6
EIA	85	1	11	2.0	-0.1	85	0	11	0	8.9	1.5
ELY	154	0	6	1.7	-0.4	158	0	9	0	8.5	2.2
EVA	1957	1	2	2.2	-0.5	1966	0	2	0	8.6	1.1
FDX	1135	1	3	2.2	0.8	1147	0	3	0	8.4	1.0
FIN	452	0	4	1.8	0.5	448	0	4	1	8.4	0.9
FJI	588	2	3	1.7	0.5	583	0	3	1	8.8	1.5
FKE	22	5	5	2.2	-0.4	22	0	5	5	6.3	-1.2

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
FOM	30	0	0	2.0	0.8	30	0	0	0	9.0	4.4
GAF	40	3	3	1.8	-0.2	41	0	0	0	7.0	1.8
GFA	37	3	5	2.5	-0.1	39	0	3	0	6.0	0.3
GIA	203	2	2	1.5	0.4	205	0	2	0	8.8	1.3
GTI	48	0	2	2.4	-0.7	49	0	6	2	9.8	0.6
HAL	1599	1	2	1.9	0.5	1602	0	3	0	9.6	1.1
HLF	183	1	1	2.1	-1.1	181	0	3	0	10.6	1.3
HRH	64	3	6	1.5	0.5	63	0	5	2	8.0	1.3
IBE	2207	1	16	2.2	0.4	2197	1	17	0	10.7	1.1
ICE	399	0	1	1.7	0.1	402	0	2	1	7.3	0.4
JAA	44	0	2	2.6	1.3	44	0	0	0	9.3	5.5
JAL	7231	0	1	2.2	0.3	7239	0	2	0	8.8	1.0
JAZ	43	0	0	2.3	0.8	43	0	0	0	10.6	0.4
KAL	3782	1	3	2.4	0.1	3784	0	2	0	8.9	1.1
KIC	101	1	2	1.9	0.1	101	0	1	0	8.0	2.3
KLM	2743	0	2	1.9	0.3	2766	0	3	0	9.2	1.1
LAN	24	4	0	2.7	-0.3	24	0	4	0	12.4	9.3
LDA	211	0	6	2.3	-1.3	212	0	6	0	8.9	0.8
LDI	368	1	23	2.2	-1.2	369	0	3	0	9.1	0.3
LIB	563	1	3	2.2	0.9	567	0	4	1	10.4	0.9
LOT	261	0	1	1.8	-0.6	264	0	1	0	7.9	0.9
LTU	845	0	2	2.0	0.2	817	0	2	0	8.6	1.4
MAS	335	0	1	2.1	-0.5	335	1	7	0	10.8	1.0
MDA	162	0	2	2.2	-0.2	162	1	0	0	7.9	-0.3
MOU	51	4	10	3.3	1.5	51	0	2	0	8.5	0.7
MPH	795	0	3	2.3	-0.9	795	0	3	0	9.1	0.4
MRS	64	0	20	4.0	-2.4	66	0	24	0	17.8	8.6
NCA	508	0	2	2.1	0.8	509	0	2	0	8.5	0.1
NUG	265	0	8	2.0	-1.5	265	0	8	3	9.4	1.3
NWA	10598	0	2	2.3	0.7	10607	0	2	0	8.7	1.1
OAL	46	0	0	2.4	1.7	50	0	4	0	13.5	1.3
PAC	54	2	4	1.8	0.1	58	0	5	2	9.9	0.4
PAL	1072	0	2	1.9	-0.2	1073	0	3	0	10.4	1.3
PAO	259	3	3	1.4	0.1	257	0	3	0	7.7	1.4
PNL	53	2	2	2.1	0.8	53	0	8	0	13.2	2.9
QFA	1226	1	2	1.7	0.3	1228	0	3	1	7.4	1.2
RAF	150	1	1	1.8	0.5	150	0	3	0	10.8	2.6
RAM	32	3	9	2.9	0.8	32	0	3	0	10.5	-0.5
RIA	186	0	3	2.7	1.4	188	1	100	0	13.2	2.1
RJA	46	0	0	1.8	0.1	47	0	2	0	9.3	1.0
RKA	81	4	5	1.6	-0.6	81	0	5	0	9.0	2.0
RON	35	3	6	1.0	0.6	35	0	3	0	6.4	0.7
RRR	107	0	21	2.4	-0.1	110	0	22	0	9.1	0.1
SAA	217	1	4	2.2	-0.6	219	0	6	1	9.2	0.5
SAB	59	0	5	1.5	-0.4	61	0	5	0	7.7	2.3
SAS	987	0	1	1.7	-0.3	983	0	2	0	8.5	0.6
SIA	1239	1	3	2.3	-0.5	1244	0	3	0	9.1	0.6
SJM	28	0	18	1.5	0.0	28	0	21	0	7.9	-0.4
SLR	21	5	19	1.8	-0.8	21	0	19	0	6.1	0.2
SOL	41	2	5	1.1	0.3	40	0	3	0	7.6	1.4
SPP	179	1	10	2.1	-0.1	164	0	9	0	10.5	1.3
SVA	117	0	6	2.4	-0.2	117	0	9	1	11.0	0.7
SVV	28	0	0	3.3	2.0	28	0	4	0	11.7	0.6
SWR	119	0	3	2.0	0.3	123	0	2	1	7.3	0.8
TAP	544	1	7	2.3	0.0	541	0	7	0	10.0	0.8
TEJ	43	0	16	1.5	0.3	43	0	16	0	9.3	-0.7
THA	266	0	3	2.4	-0.7	267	0	3	0	9.4	0.2
TOW	74	0	4	1.9	0.2	77	0	9	0	11.2	2.2
TWA	1334	0	2	2.2	0.1	1338	0	2	0	8.9	1.1

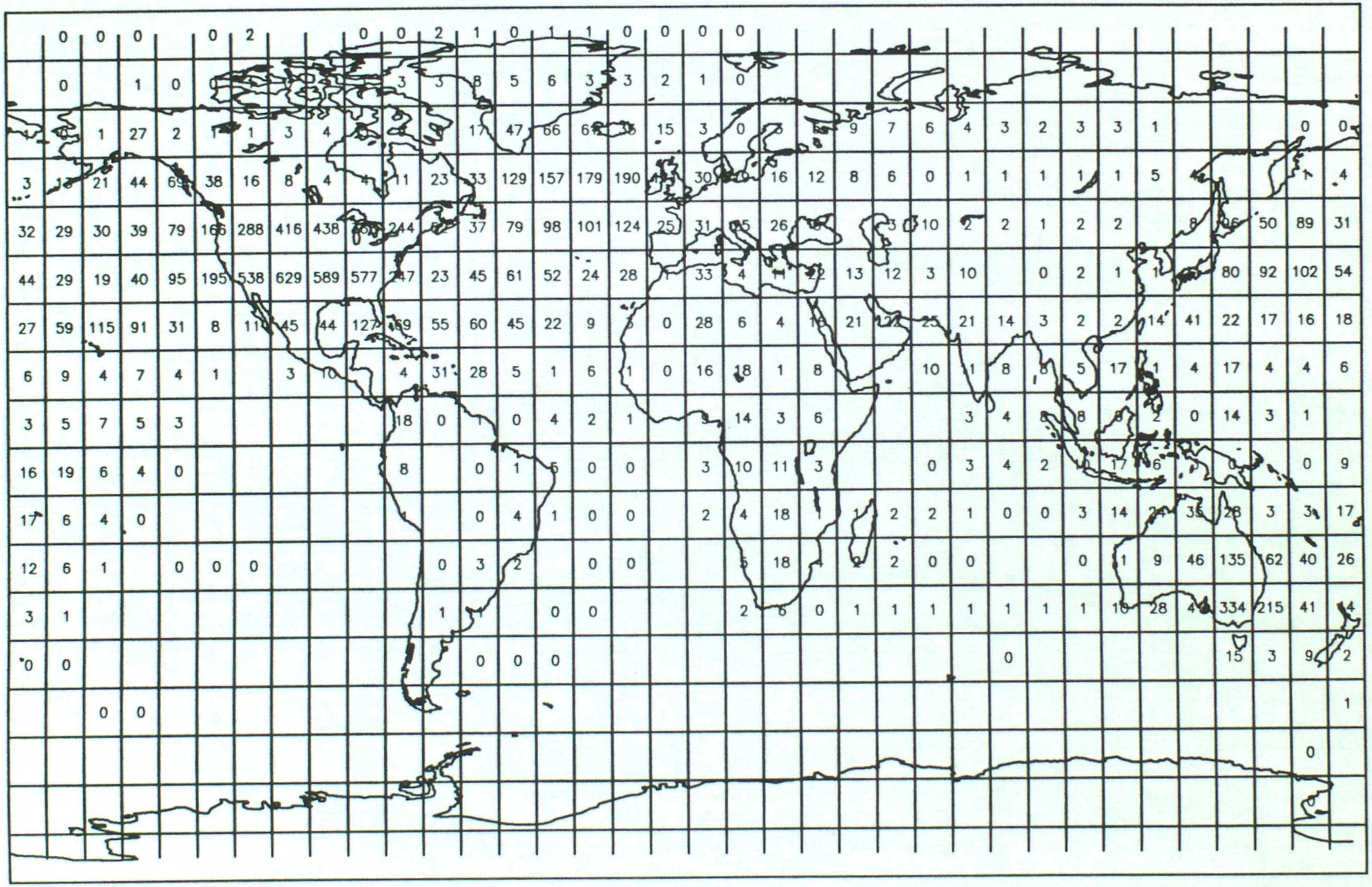
		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
UAL	48008	1	3	1.8	0.2	48046	0	4	0	7.9	1.0
ULE	184	0	3	1.7	-0.1	179	1	4	0	8.3	1.7
UPS	835	1	11	1.9	0.2	848	0	11	0	7.9	0.8
USA	70	0	1	1.8	-0.4	69	0	3	0	7.9	1.0
VIA	578	1	4	2.1	0.9	583	0	5	1	8.6	1.0
VIR	164	1	3	1.9	-0.2	164	0	4	1	8.6	1.9
VRB	22	0	5	3.4	0.6	22	0	0	0	6.0	-0.5
VRG	50	2	4	2.4	0.6	51	0	2	0	9.7	0.6
VSP	150	1	5	2.7	0.2	150	0	1	0	8.7	1.0
WOA	160	0	9	2.3	0.5	166	0	10	0	7.8	1.5
AN	25213	0	1	1.2	0.2	24970	0	1	0	6.5	1.3
BA	24573	0	10	1.7	0.6	24512	0	32	0	7.2	1.4
DL	70161	0	3	1.8	0.2	70161	0	9	0	7.4	1.4
KL	13284	0	9	1.6	0.4	13279	0	9	0	7.3	1.4
LH	3044	0	3	1.7	0.2	3008	0	3	0	6.8	1.3
MF	32	0	0	2.2	-0.1	38	0	0	0	6.3	0.7
NW	22106	0	1	1.8	0.2	22106	0	4	0	6.9	1.1
PN	28	4	7	2.5	1.9	27	0	11	0	15.5	2.5
QF	8813	0	1	1.3	0.3	8806	0	1	0	6.6	1.2
SA	3178	2	3	1.8	1.3	3174	0	46	0	10.8	2.3
SV	1677	0	2	2.2	1.3	1672	0	2	0	7.9	1.9
M	324	3	95	3.0	0.6	327	0	95	0	12.9	2.1
N	462	2	5	2.7	0.8	482	0	5	0	9.7	0.9

MEAN DAILY COUNT OF AIRCRAFT 70 – 500 HPA

FIGURE 3

JANUARY 1996

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED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27 59 115 91 31 8 11 45 44 127 69 55 60 45 22 9 5 0 28 6 4 18 21 22 25 21 14 3 2 2 14 41 22 17 16 18
6 9 4 7 4 1 3 10 4 31 28 5 1 6 1 0 16 18 1 8 10 1 8 8 5 17 1 4 17 4 4 6
3 5 7 5 3 18 0 1 0 4 2 1 3 14 3 6 3 4 8 8 8 2 0 14 3 1
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12 6 1 0 0 0 0 3 2 0 0 5 18 4 2 2 0 0 0 1 9 46 135 62 40 26
3 1 1 1 0 0 2 6 0 1 1 1 1 1 1 1 10 28 48 334 215 41 14
0 0 0 0 0 0 15 3 9 2
0 0 1
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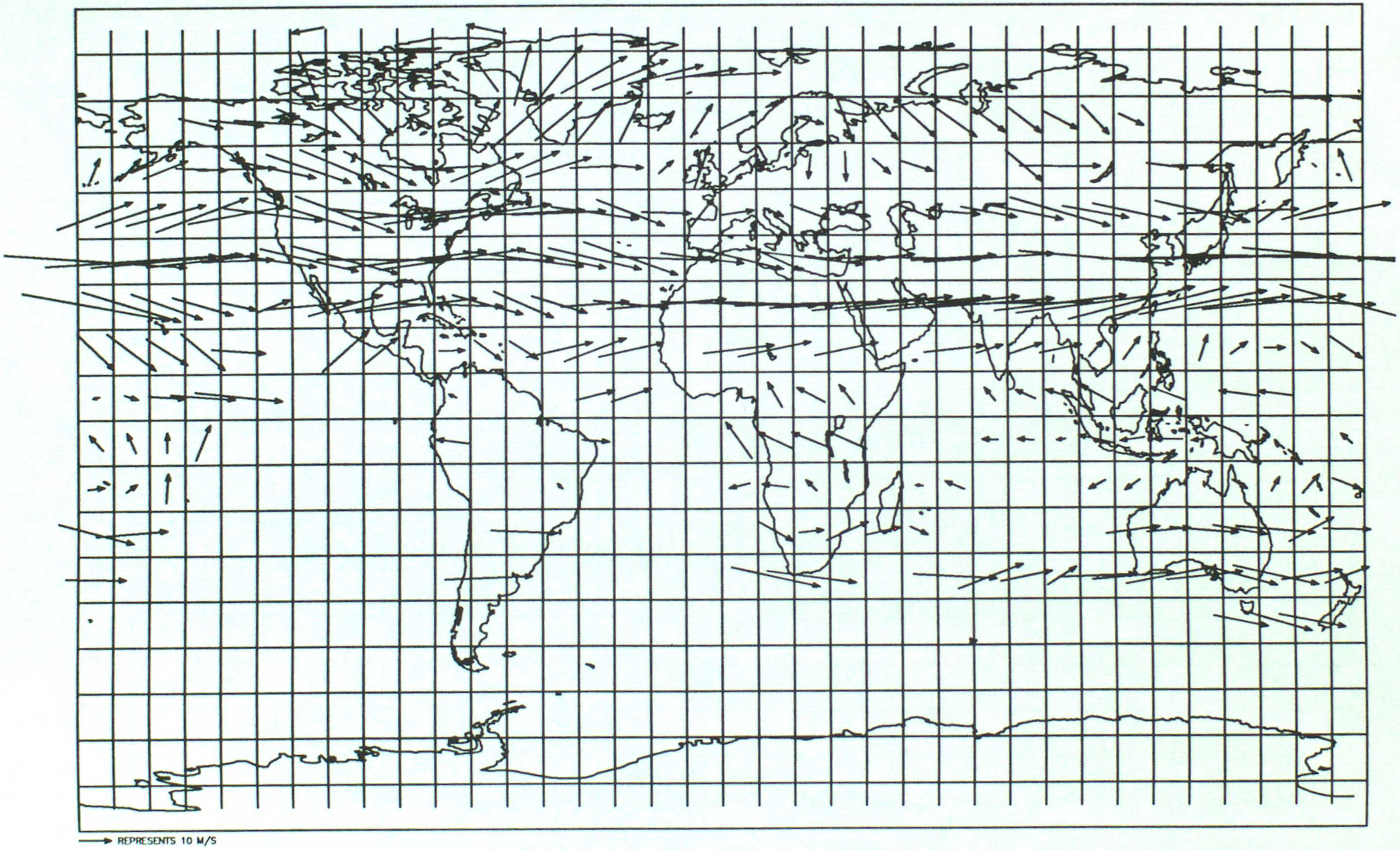
AIRCRAFT MEAN WINDS BETWEEN 70 AND 500 HPA
FIGURE 4
JANUARY 1996
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

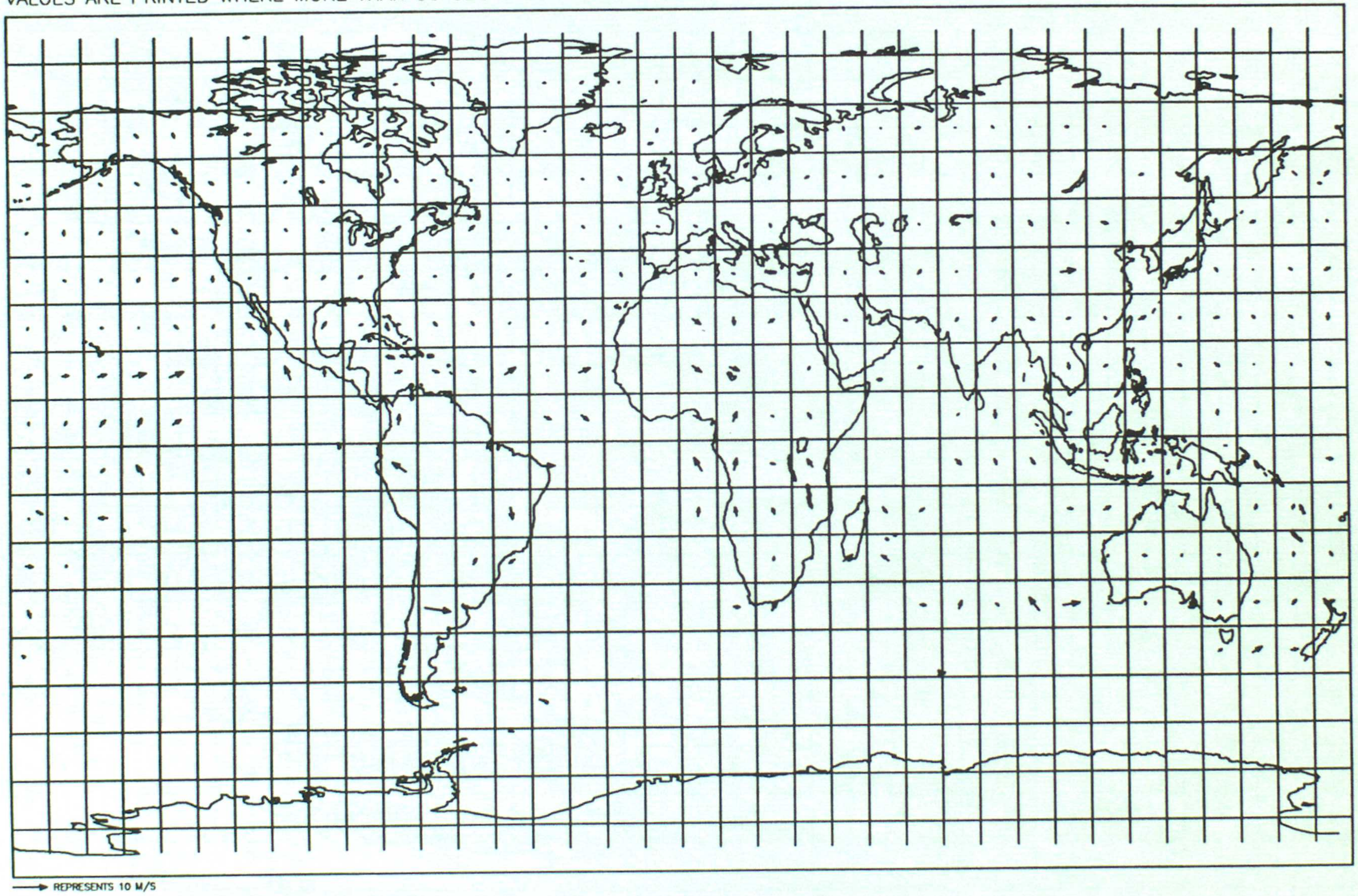


AIRCRAFT MEAN O–B WINDS BETWEEN 70 AND 500 HPA FIGURE 5

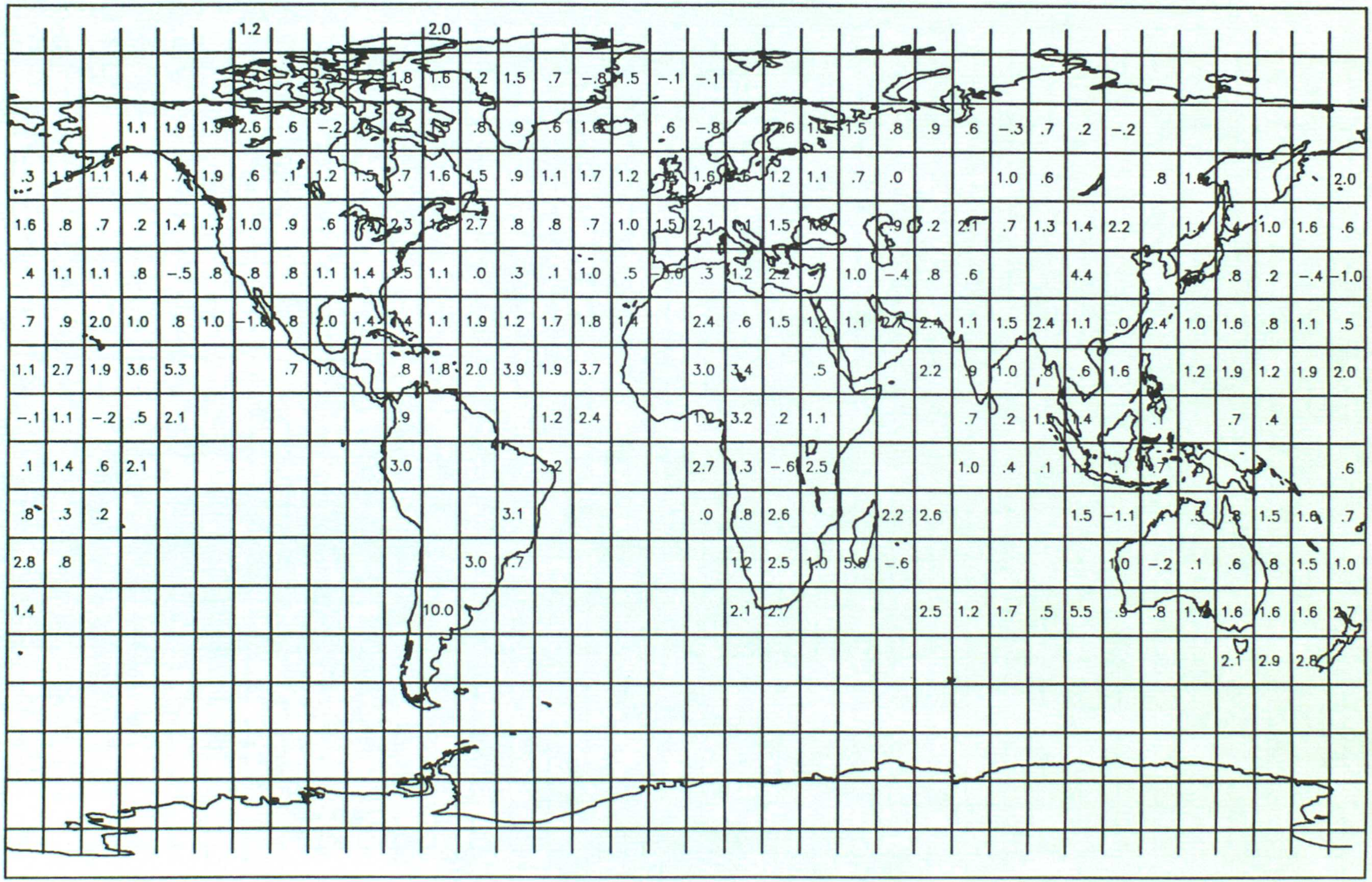
JANUARY 1996

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



AIRCRAFT : MEAN O–B SPEEDS (M/S) BETWEEN 70 AND 500 HPA FIGURE 6
JANUARY 1996
OBSERVATIONS WITH O–B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT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.3 1.8 1.1 1.4 .7 1.9 .6 .1 1.2 1.5 .7 1.6 1.5 .9 1.1 1.7 1.2 1.6 1.2 1.1 .7 .0 1.0 .6 .8 1.6 2.0
1.6 .8 .7 .2 1.4 1.3 1.0 .9 .6 2.3 2.7 .8 .8 .7 1.0 1.5 2.1 1.5 .2 2.1 .7 1.3 1.4 2.2 1.0 1.6 .6
.4 1.1 1.1 .8 −.5 .8 .8 .8 1.1 1.4 .5 1.1 .0 .3 .1 1.0 .5 .3 1.2 2.2 1.0 −.4 .8 .6 4.4 .8 .2 −.4 −1.0
.7 .9 2.0 1.0 .8 1.0 −1.8 .8 2.0 1.4 1.4 1.1 1.9 1.2 1.7 1.8 1.4 2.4 .6 1.5 1.2 1.1 2.7 2.4 1.1 1.5 2.4 1.1 .0 2.4 1.0 1.6 .8 1.1 .5
1.1 2.7 1.9 3.6 5.3 .7 1.0 .8 1.8 2.0 3.9 1.9 3.7 3.0 3.4 .5 2.2 .9 1.0 .8 .6 1.6 1.2 1.9 1.2 1.9 2.0
−.1 1.1 −.2 .5 2.1 .9 1.2 2.4 1.2 3.2 .2 1.1 .7 .2 1.5 1.4 .1 .7 .4
.1 1.4 .6 2.1 3.0 3.2 2.7 1.3 −.6 2.5 1.0 .4 .1 .6
.8 .3 .2 3.1 .0 1.8 2.6 2.2 2.6 1.5 −1.1 .3 .8 1.5 1.6 .7
2.8 .8 3.0 1.7 1.2 2.5 1.0 5.6 −.6 1.0 −.2 .1 .6 .8 1.5 1.0
1.4 10.0 2.1 2.7 2.5 1.2 1.7 .5 5.5 .9 .8 1.7 1.6 1.6 1.6 2.7
2.1 2.9 2.8

AIRCRAFT : RMS O-B VECTOR (M/S) BETWEEN 70 AND 500 HPA FIGURE 7
JANUARY 1996
OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

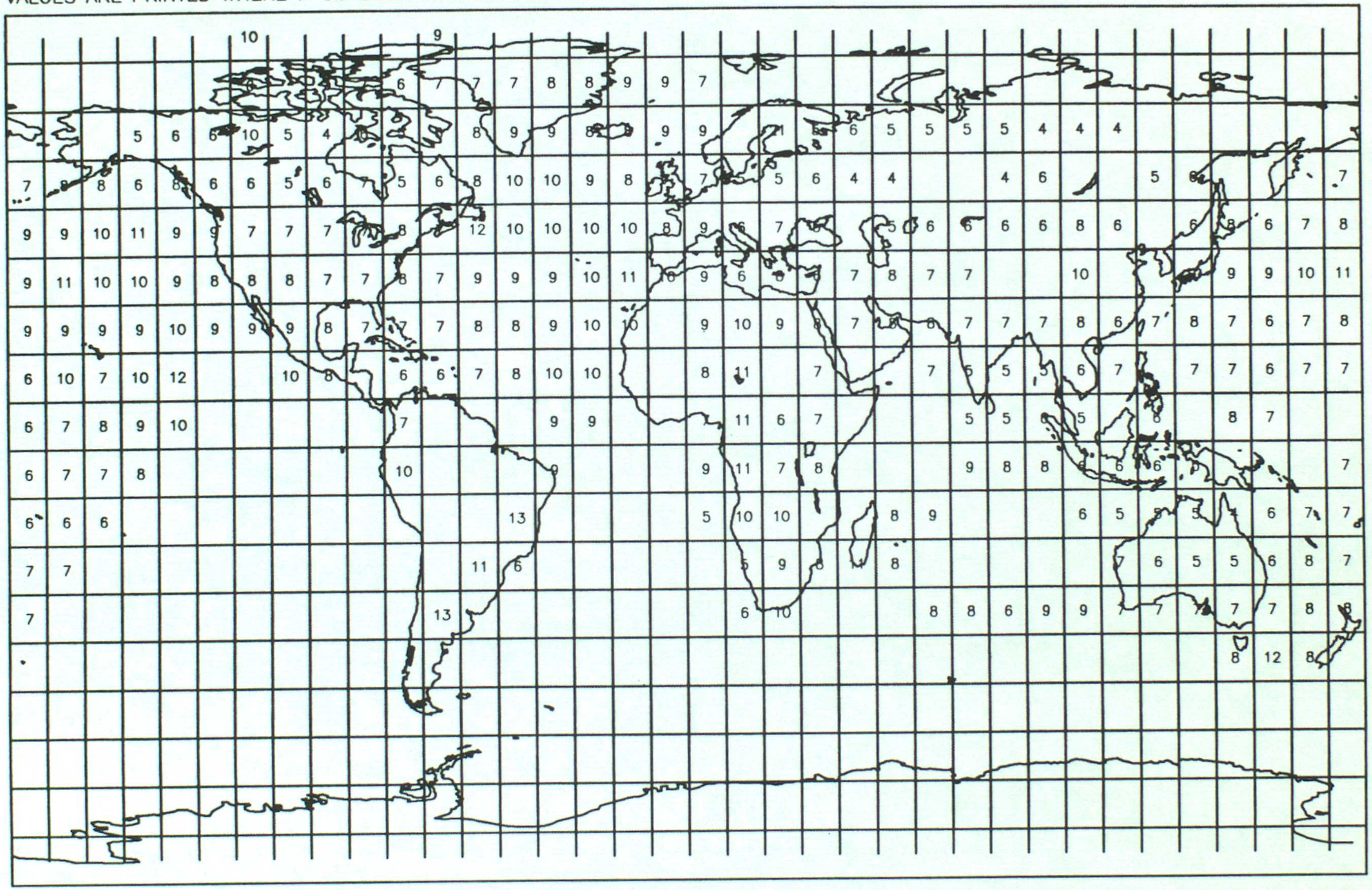


TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: January, 1996

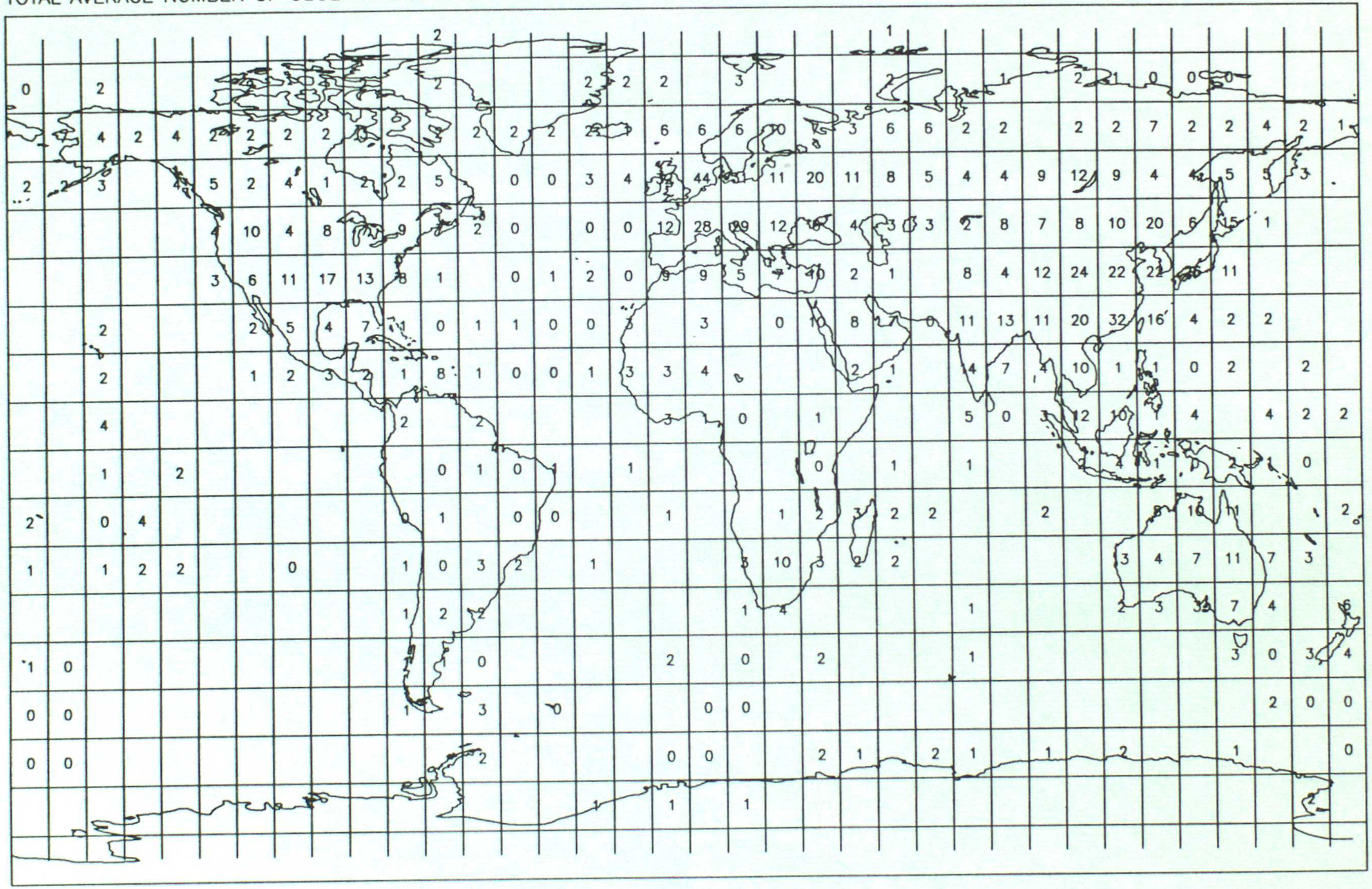
Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored		
	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
20674	12	Z	250	73/ 80	16	0	83.1	-5.1	83.2	4
37018	00	Z	70	44/ 39	15	0	44.5	150.6	157.0	8
37018	12	Z	30	44/ 39	12	0	71.9	279.9	289.0	9
41316	00	Z	50	17/ 54	18	0	145.7	-127.6	193.7	4
42182	00	Z	50	29/ 77	12	0	126.4	-147.2	194.0	7
42182	12	Z	70	29/ 77	17	0	121.9	-78.8	145.1	8
42314	00	Z	150	27/ 95	17	0	101.0	-75.3	125.9	8
42314	12	Z	200	27/ 95	19	0	64.6	-110.1	127.6	7
42339	00	Z	150	26/ 73	16	0	76.4	-90.3	118.3	6
42339	12	Z	150	26/ 73	16	2	66.5	-84.0	107.1	7
42361	12	Z	150	26/ 78	12	0	121.3	-31.7	125.4	4
42369	00	Z	300	27/ 81	20	0	53.6	-47.5	71.6	5
42369	12	Z	100	27/ 81	16	0	135.7	7.3	135.9	9
42379	12	Z	50	27/ 83	21	1	152.4	-59.5	163.6	10
42397	12	Z	400	27/ 88	19	0	56.4	-31.0	64.3	4
42492	00	Z	200	26/ 85	28	1	76.0	-44.8	88.2	4
42492	12	Z	70	26/ 85	16	0	123.0	-85.0	149.5	5
42647	00	Z	150	23/ 73	17	0	76.6	-97.3	123.8	7
42701	00	Z	70	23/ 85	13	0	188.3	-66.5	199.7	7
42724	00	Z	250	24/ 91	17	0	76.1	-34.7	83.6	6
42867	00	Z	150	21/ 79	22	0	90.7	-71.8	115.6	8
42875	00	Z	150	21/ 82	17	0	76.2	-84.6	113.9	7
42875	12	Z	200	21/ 82	16	0	102.1	-36.2	108.4	5
42971	12	Z	150	20/ 86	13	2	92.7	-77.3	120.7	7
43014	00	Z	200	20/ 75	16	2	80.7	-87.4	119.0	6
43041	00	Z	150	19/ 82	17	1	83.1	-111.2	138.8	8
43041	12	Z	100	19/ 82	11	1	144.9	-81.6	166.4	7
43128	12	Z	30	17/ 78	18	2	163.7	176.4	240.6	8
43192	00	Z	100	15/ 74	17	0	77.1	-140.3	160.1	5
43285	12	Z	200	13/ 75	23	0	67.0	64.6	93.0	6
43353	00	Z	100	10/ 76	9	1	100.0	-93.2	136.7	5
43369	00	Z	100	8/ 73	13	2	76.2	-119.1	141.4	8
43371	00	Z	100	8/ 77	16	2	106.9	-161.1	193.3	8
43371	12	Z	70	8/ 77	20	1	144.3	28.0	147.0	6
44373	12	Z	200	44/ 104	15	4	77.1	150.3	169.0	6
54337	00	Z	1000	41/ 121	4	0	58.1	-2.0	58.1	6
54497	00	Z	30	40/ 124	25	1	74.4	167.6	183.4	7
54497	12	Z	70	40/ 124	25	0	94.5	103.0	139.7	6
56985	12	Z	100	23/ 103	31	0	39.6	114.0	120.7	5
57679	00	Z	100	28/ 113	20	0	36.5	109.3	115.3	4
58424	12	Z	150	31/ 117	31	0	24.8	95.3	98.5	4
60490	12	Z	500	36/ -1	10	6	36.9	-81.9	89.8	8
62306	12	Z	70	31/ 27	12	1	86.4	269.2	282.7	8
62378	12	Z	100	30/ 31	12	0	72.0	198.4	211.1	4
63450	12	Z	700	9/ 39	26	0	5.3	53.2	53.5	7
71603	12	Z	50	44/ -66	28	0	147.2	-50.1	155.5	6
82332	12	Z	50	-3/ -60	24	0	36.5	203.0	206.3	5
89050	00	Z	250	-62/ -59	30	0	58.2	63.4	86.1	8
96163	00	Z	150	-1/ 100	21	2	117.8	-58.6	131.6	7

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – JANUARY 1996 FIGURE 8
ALL HOURS
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1381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4 10 4 8 9 2 0 0 0 12 28 29 12 6 4 3 3 2 8 7 8 10 20 6 15 1
3 6 11 17 13 8 1 0 1 2 0 9 9 5 7 10 2 1 8 4 12 24 22 22 26 11
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1 1 1 2

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: January, 1996

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
41316	00	V	200	17/ 54	23	0	26	-20.9	-0.2	23.0	4
42182	12	V	200	29/ 77	10	0	10	-9.0	-1.9	17.2	1
42339	00	V	250	26/ 73	19	0	10	-19.3	-10.8	24.8	4
42339	12	V	200	26/ 73	16	0	37	-16.7	-11.3	29.9	5
43014	12	V	200	20/ 75	11	0	9	8.1	4.3	15.0	1
55591	00	V	100	30/ 91	19	0	26	10.6	6.0	15.0	1
56691	00	V	100	27/ 104	23	0	26	7.2	4.5	15.8	1
56691	12	V	200	27/ 104	26	0	15	4.3	7.7	17.7	2
58633	00	V	100	29/ 119	26	0	11	9.5	2.1	16.5	1
58633	12	V	150	29/ 119	27	0	7	6.2	-0.4	15.2	2
68263	00	V	300	-26/ 28	10	0	10	4.6	-3.6	17.2	1
72249	12	V	200	33/ -97	18	0	0	10.1	0.4	16.1	1
78384	12	V	300	19/ -81	22	0	18	8.1	5.0	17.8	1

AVAILABILITY – TEMP/PILOT – 300 HPA WIND – JANUARY 1996 FIGURE 9

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1227

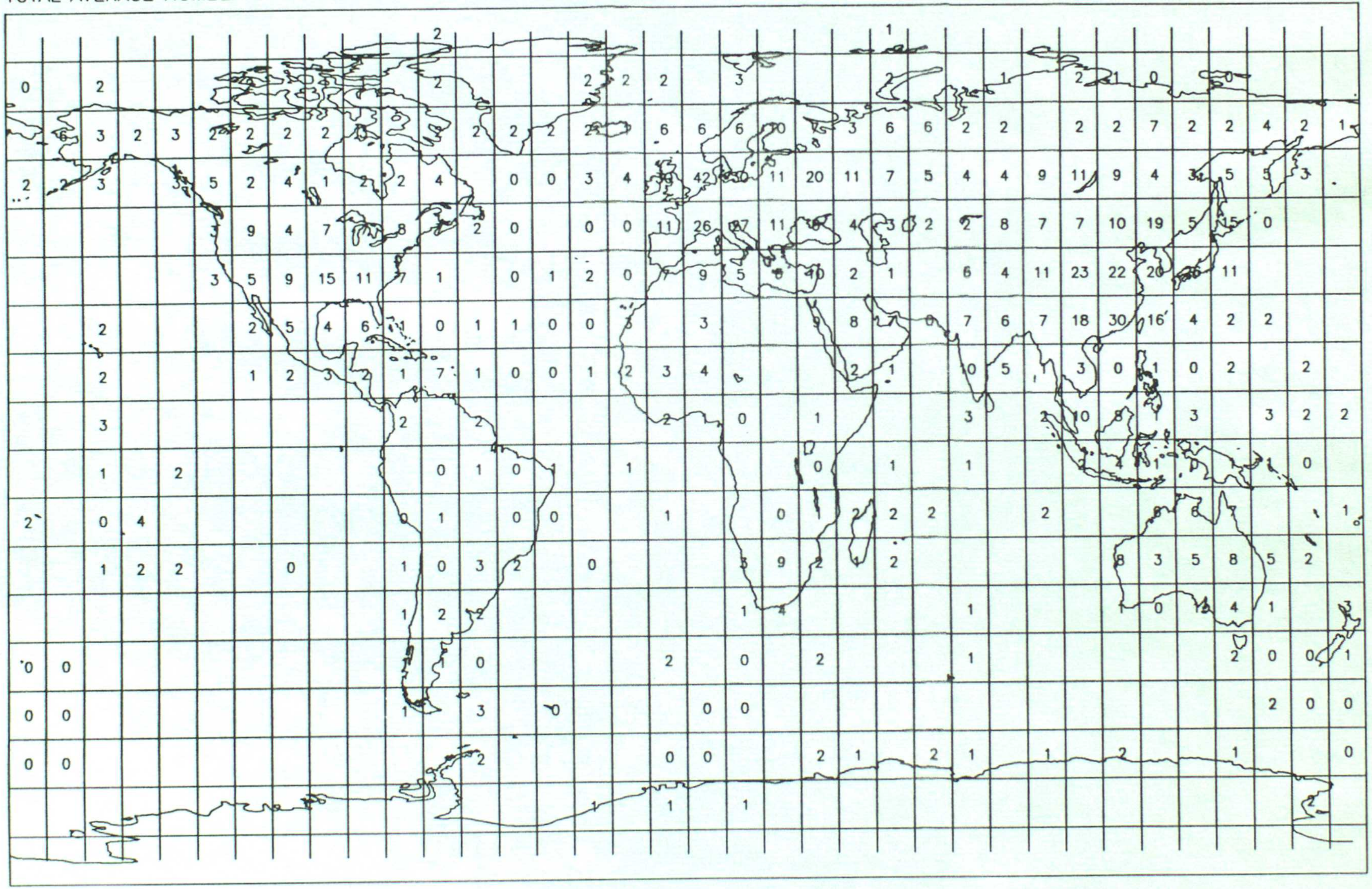

2 1
0 2 2 2 2 2 3 2 1 2 1 0 0
6 3 2 3 2 2 2 2 0 3 2 2 2 2 6 6 6 10 5 3 6 6 2 2 2 2 7 2 2 4 2 1
2 2 3 3 5 2 4 1 2 2 4 0 0 3 4 39 42 30 11 20 11 7 5 4 4 9 11 9 4 3 5 5 3
3 9 4 7 8 2 0 0 0 11 26 37 11 16 4 3 2 2 8 7 7 10 19 5 15 0
3 5 9 15 11 7 1 0 1 2 0 7 9 5 8 40 2 1 6 4 11 23 22 20 26 11
2 2 5 4 6 1 0 1 1 0 0 3 3 9 8 7 0 7 6 7 18 30 16 4 2 2
2 1 2 3 2 1 7 1 0 0 1 2 3 4 2 1 10 5 1 3 0 1 0 2 2
3 2 2 2 0 1 3 2 10 8 3 3 2 2
1 2 0 1 0 1 1 0 1 1 4 1 1 0
2 0 4 0 1 0 0 1 0 1 2 2 2 8 6 7 1
1 2 2 0 1 0 3 2 0 3 9 2 1 2 8 3 5 8 5 2
1 2 2 1 4 1 1 0 12 4 1 3
0 0 1 0 2 0 2 1 2 0 0 1
0 0 1 3 0 0 0 2 0 0
0 0 2 0 0 2 1 2 1 1 2 1 0
1 1 1 2

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: January, 1996

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 500.0 - 150.0 hPa
Element monitored		:WIND DIRECTION in degrees
Parameters monitored		
	:NUM OBS	:Average number of observations at all levels.
	:BIAS	:Mean difference of observations from background values from all levels.
	:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
	:SD	:SD of difference of observations from background values at all levels.

SELECTION CRITERIA

:NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
FNRS	12	DD	24/ -48	12	11.6	7.7	26.8
16144	00	DD	45/ 12	21	14.1	8.8	29.1
16144	12	DD	45/ 12	21	15.2	5.4	19.3
17240	00	DD	38/ 31	28	-10.0	4.3	17.5
17280	00	DD	38/ 40	29	-11.3	4.2	15.1
31168	12	DD	56/ 138	6	11.2	8.4	14.9
40265	00	DD	32/ 36	25	-25.5	2.0	11.4
42339	00	DD	26/ 73	20	15.9	1.4	7.7
42339	12	DD	26/ 73	18	12.5	4.5	9.9
48615	00	DD	6/ 102	22	-10.3	8.1	17.9
48648	00	DD	3/ 102	24	-10.7	7.3	14.6
48657	00	DD	4/ 103	23	-10.3	7.8	17.0
50527	00	DD	49/ 120	28	11.6	9.6	23.1
53614	00	DD	38/ 106	30	-12.9	2.5	7.1
53614	12	DD	38/ 106	31	-12.2	5.5	8.9
55591	00	DD	30/ 91	27	-14.4	7.1	10.1
60571	00	DD	32/ -2	15	13.9	6.1	12.2
60571	12	DD	32/ -2	21	12.5	1.2	10.3
91938	00	DD	-18/-150	24	-12.8	3.9	18.0
91938	12	DD	-18/-150	24	-10.3	7.5	18.7
96413	00	DD	1/ 110	22	-10.3	4.9	15.5

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

MONTH: January, 1996

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from GOES, METEOSAT, GMS, INSAT.

Standard of comparison :Background field from Bracknell global model.

Selection Criteria :number of observations > 10.

Data Extracted :Layer 701 - 1000 hPa
401 - 700 hPa
101 - 400 hPa

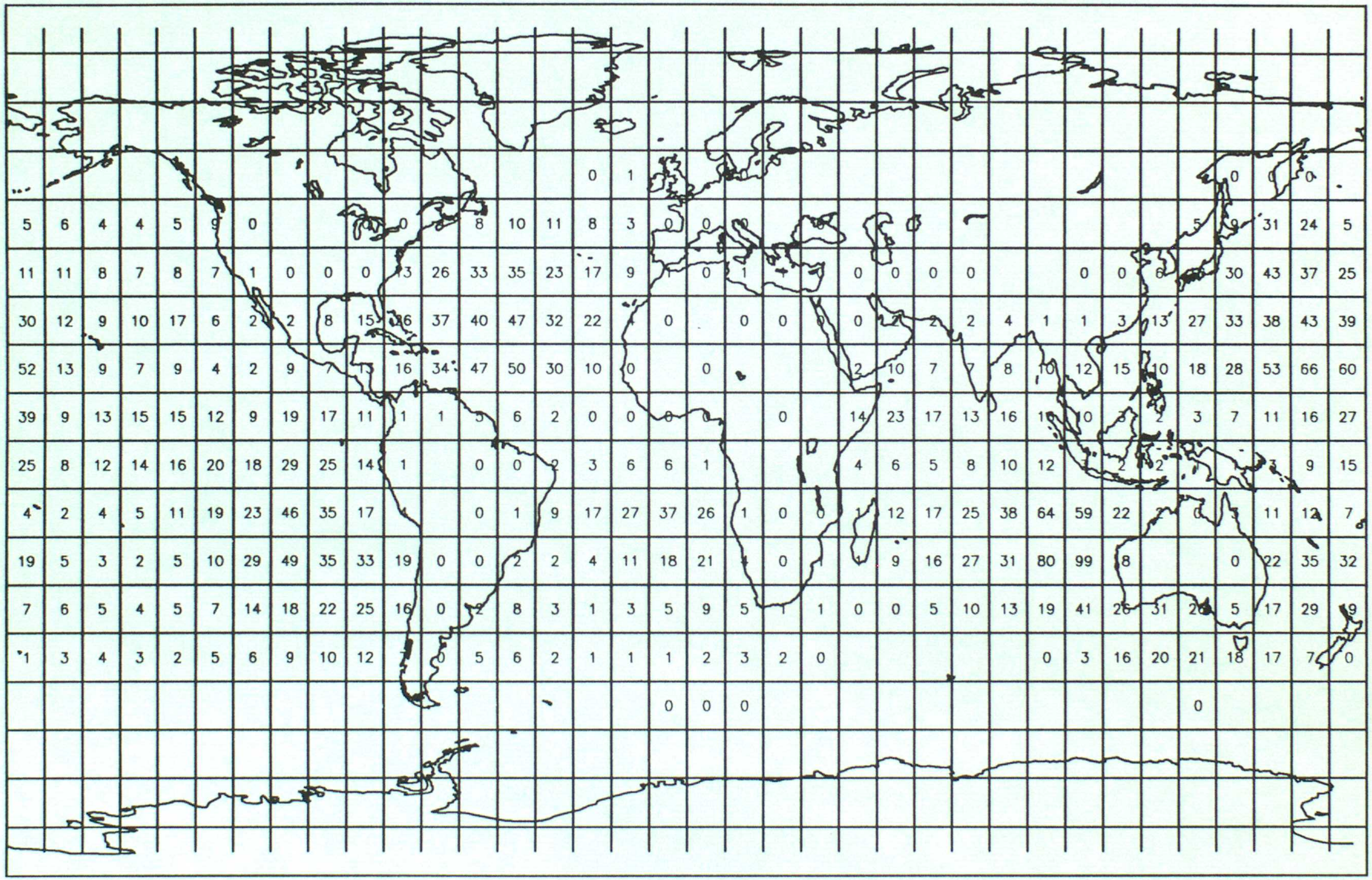
:Mean wind

:Mean observation minus background vector wind differences

:Mean observation minus background speed differences

:RMS of observation minus background vector differences

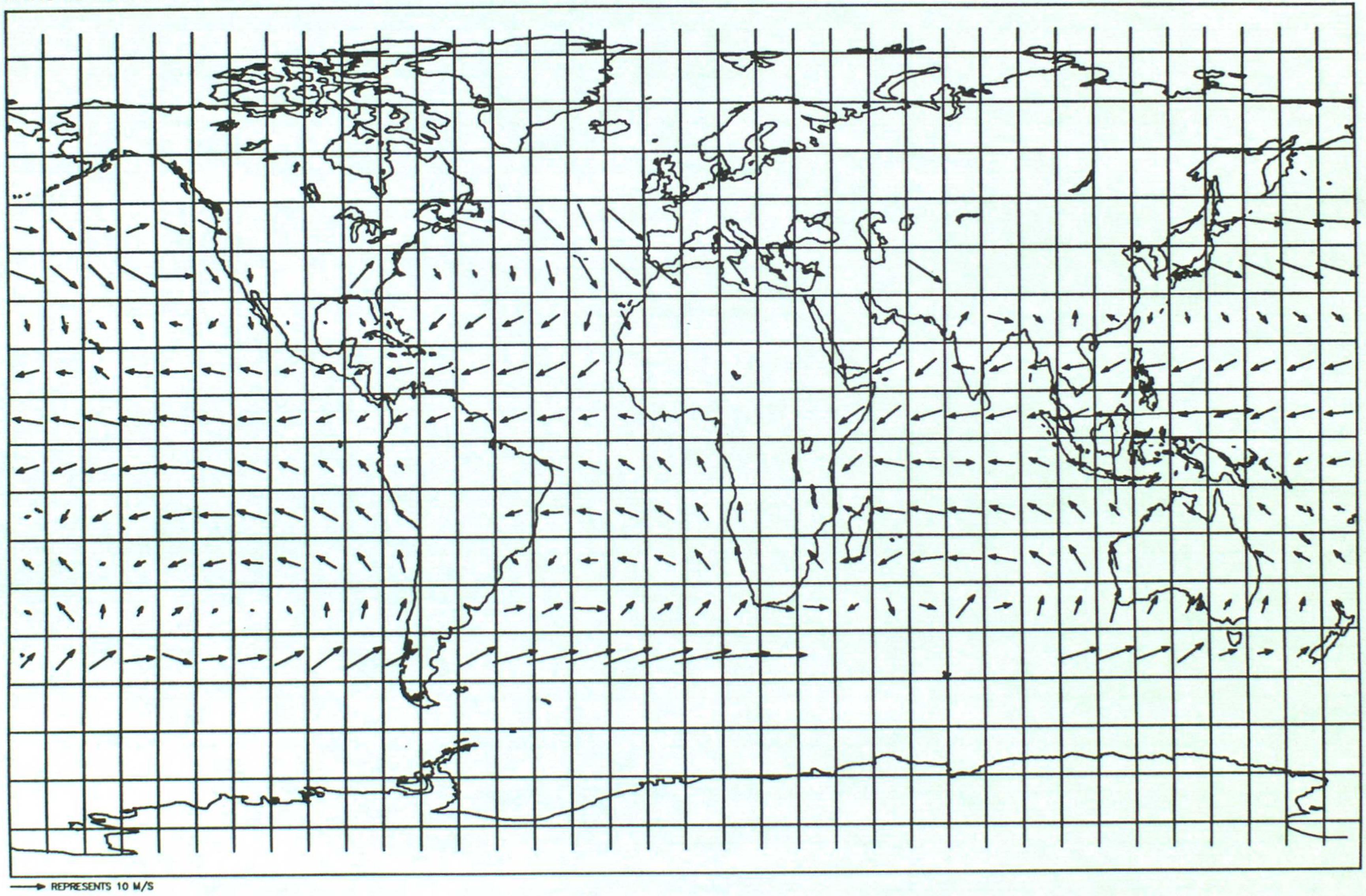
AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
JANUARY 1996



														0	1																0	0	0	
5	6	4	4	5	9	0			0	0		8	10	11	8	3	0	0	0		0										5	9	31	24	5
11	11	8	7	8	7	1	0	0	0	13	26	33	35	23	17	9	1	0	1		0	0	0	0	0			0	0	6	26	30	43	37	25
30	12	9	10	17	6	2	2	8	15	36	37	40	47	32	22	4	0		0	0	0	0	2	2	2	4	1	1	3	13	27	33	38	43	39
52	13	9	7	9	4	2	9	7	13	16	34	47	50	30	10	0		0				2	10	7	7	8	10	12	15	10	18	28	53	66	60
39	9	13	15	15	12	9	19	17	11	1	1	5	6	2	0	0	0	0		0		14	23	17	13	16	16	10	3	2	3	7	11	16	27
25	8	12	14	16	20	18	29	25	14	1		0	0	2	3	6	6	1				4	6	5	8	10	12	1	2	2	1		3	9	15
4	2	4	5	11	19	23	46	35	17	4		0	1	9	17	27	37	26	1	0	0	1	12	17	25	38	64	59	22	2	0	3	11	12	7
19	5	3	2	5	10	29	49	35	33	19	0	0	2	2	4	11	18	21	4	0	1	1	9	16	27	31	80	99	8			0	22	35	32
7	6	5	4	5	7	14	18	22	25	16	0	2	8	3	1	3	5	9	5	1	1	0	0	5	10	13	19	41	26	31	26	5	17	29	19
1	3	4	3	2	5	6	9	10	12	7	0	5	6	2	1	1	1	2	3	2	0						0	3	16	20	21	18	17	7	0
																	0	0	0												0				

SATOB VECTOR MEAN WINDS BETWEEN 701–1000 HPA
JANUARY 1996
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 11


→ REPRESENTS 10 M/S

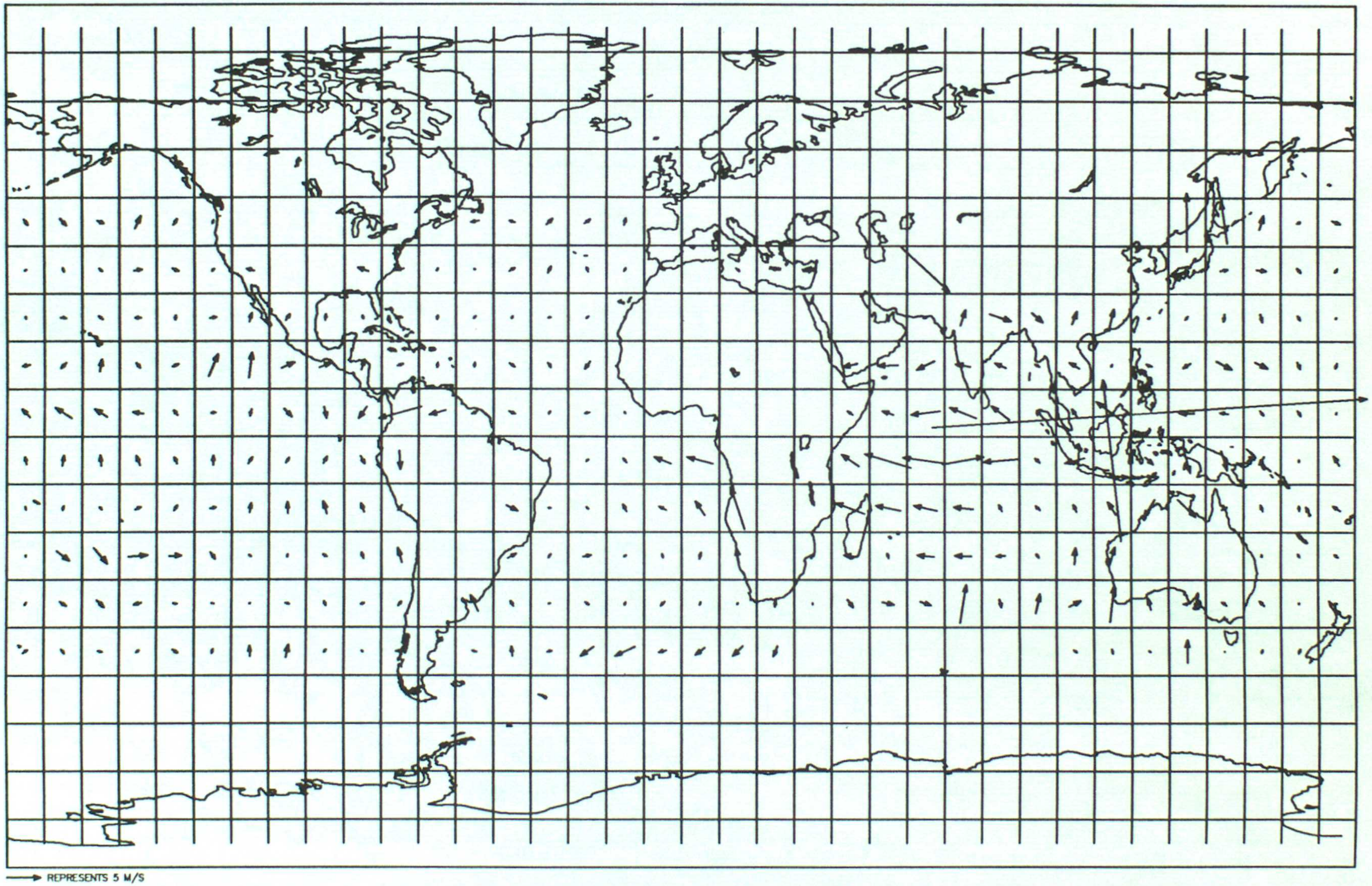
SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 701–1000 HPA

FIGURE 12

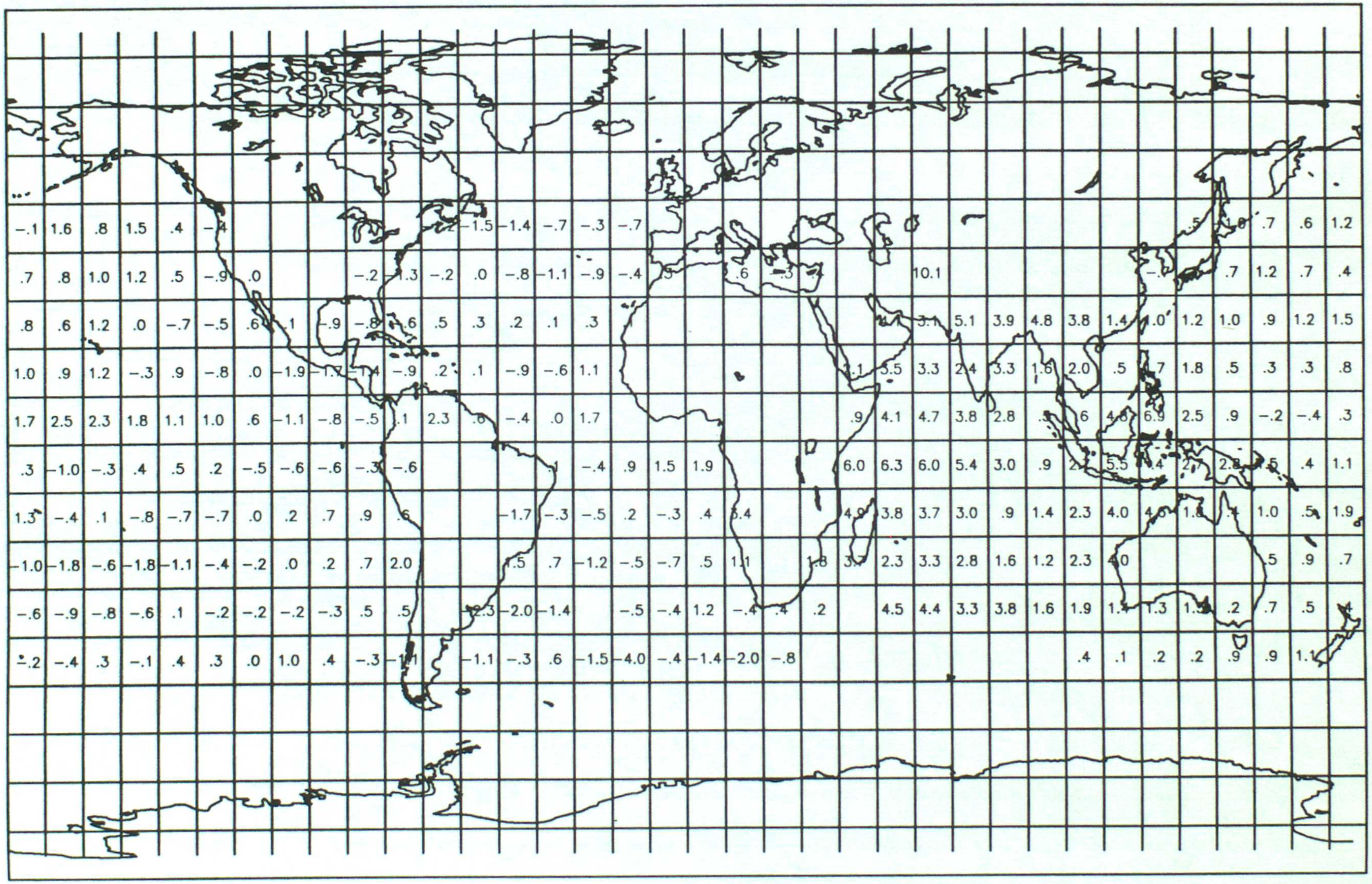
JANUARY 1996

ALL OBSERVATIONS

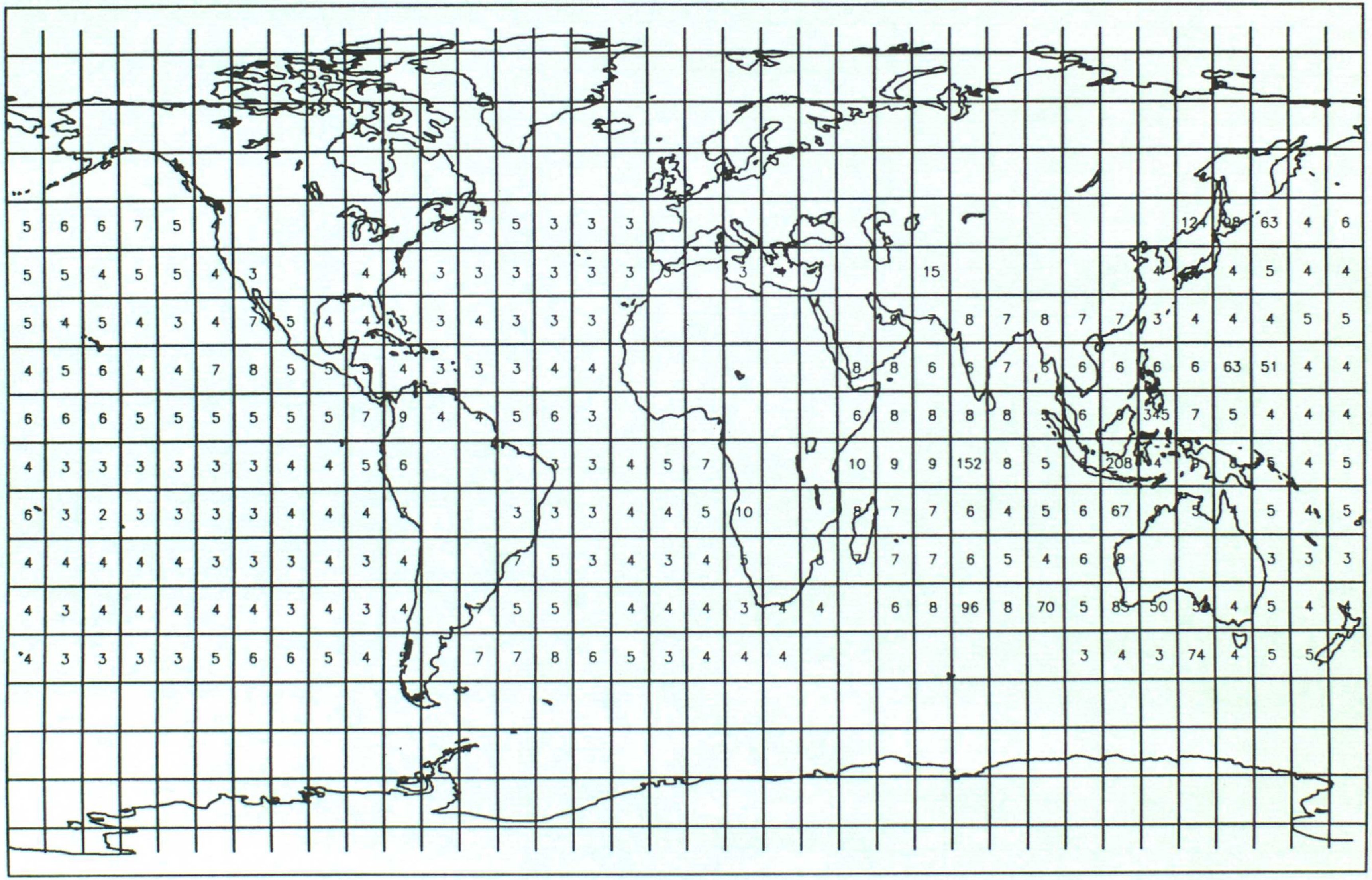
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT



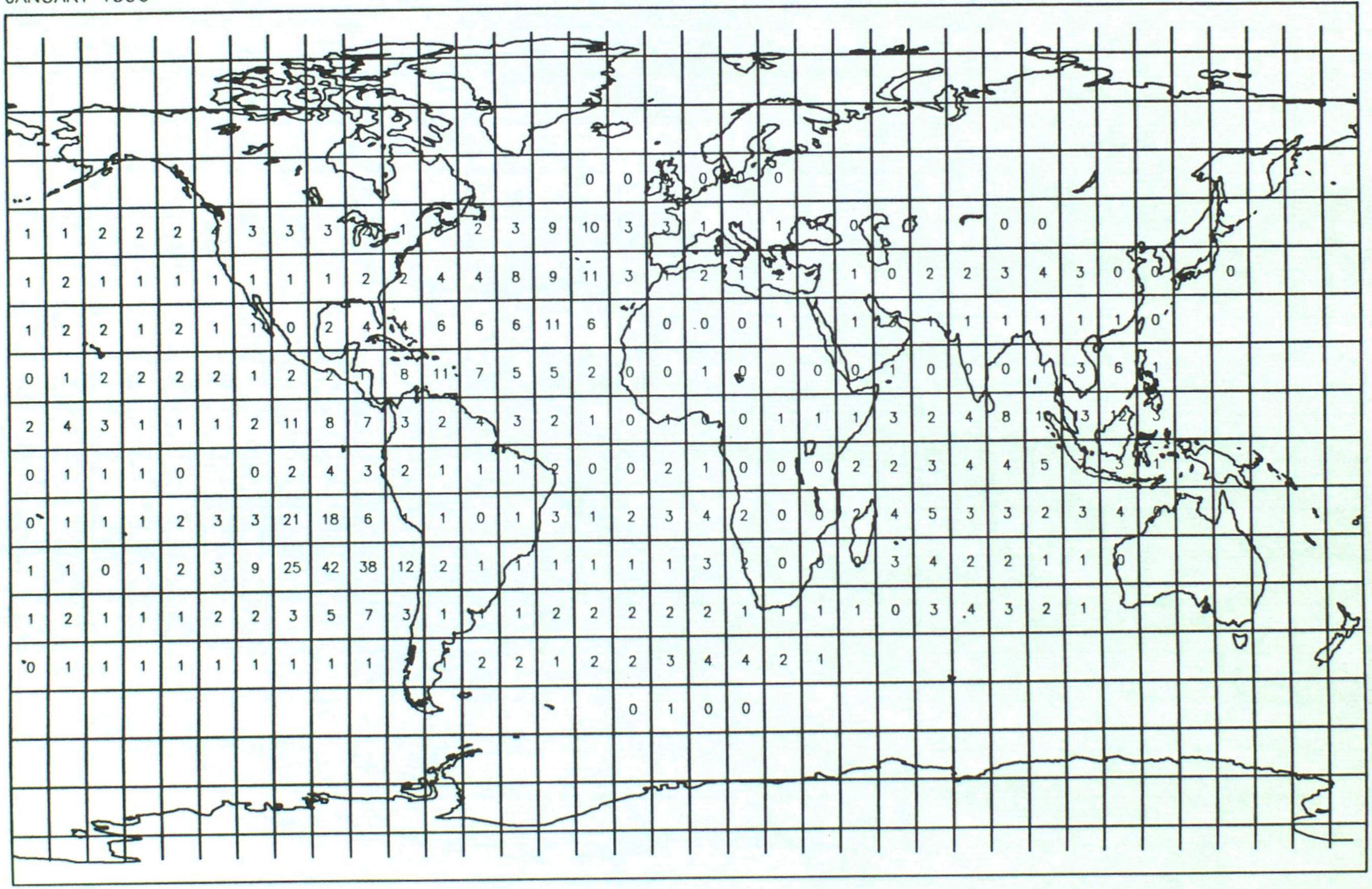
SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13
JANUARY 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-.1 1.6 .8 1.5 .4 -.4 -.2 -1.5 -1.4 -.7 -.3 -.7 .5 1.6 .7 .6 1.2
.7 .8 1.0 1.2 .5 -.9 .0 -.2 -1.3 -.2 .0 -.8 -1.1 -.9 -.4 .5 .6 -.3 .4 10.1 -.1 .7 1.2 .7 .4
.8 .6 1.2 .0 -.7 -.5 .6 .1 -.9 -.8 -.6 .5 .3 .2 .1 .3 4.1 3.1 5.1 3.9 4.8 3.8 1.4 1.0 1.2 1.0 .9 1.2 1.5
1.0 .9 1.2 -.3 .9 -.8 .0 -1.9 -1.7 -1.4 -.9 .2 .1 -.9 -.6 1.1 .1 5.5 3.3 2.4 3.3 1.6 2.0 .5 .7 1.8 .5 .3 .3 .8
1.7 2.5 2.3 1.8 1.1 1.0 .6 -1.1 -.8 -.5 .1 2.3 .6 -.4 .0 1.7 .9 4.1 4.7 3.8 2.8 .3 .6 4.6 6.9 2.5 .9 -.2 -.4 .3
.3 -1.0 -.3 .4 .5 .2 -.5 -.6 -.6 -.3 -.6 .1 -.4 .9 1.5 1.9 6.0 6.3 6.0 5.4 3.0 .9 2.1 5.5 .4 2.7 2.8 .5 .4 1.1
1.3 -.4 .1 -.8 -.7 -.7 .0 .2 .7 .9 .6 -1.7 -.3 -.5 .2 -.3 .4 3.4 4.0 3.8 3.7 3.0 .9 1.4 2.3 4.0 4.0 1.8 .4 1.0 .5 1.9
-1.0 -1.8 -.6 -1.8 -1.1 -.4 -.2 .0 .2 .7 2.0 .5 .7 -1.2 -.5 -.7 .5 1.1 1.8 3.7 2.3 3.3 2.8 1.6 1.2 2.3 4.0 .5 .9 .7
-.6 -.9 -.8 -.6 .1 -.2 -.2 -.2 -.3 .5 .5 -2.3 -2.0 -1.4 -.5 -.4 1.2 -.4 .4 .2 4.5 4.4 3.3 3.8 1.6 1.9 1.4 1.3 1.3 .2 .7 .5 .4
-.2 -.4 .3 -.1 .4 .3 .0 1.0 .4 -.3 -1.1 -1.1 -.3 .6 -1.5 -4.0 -.4 -1.4 -2.0 -.8 .4 .1 .2 .2 .9 .9 1.1

SATOBS : RMS O−B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
JANUARY 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


5 6 6 7 5 4 5 5 3 3 3 124 98 63 4 6
5 5 4 5 5 4 3 4 4 3 3 3 3 3 3 5 3 3 15 4 4 5 4 4
5 4 5 4 3 4 7 5 4 4 3 3 4 3 3 3 5 8 7 8 7 8 7 7 3 4 4 4 5 5
4 5 6 4 4 7 8 5 5 5 4 3 3 3 4 4 8 8 6 6 7 6 6 6 6 6 63 51 4 4
6 6 6 5 5 5 5 5 5 7 9 4 4 5 6 3 6 8 8 8 8 5 6 8 345 7 5 4 4 4
4 3 3 3 3 3 3 4 4 5 6 3 3 4 5 7 10 9 9 152 8 5 6 208 4 8 8 5 4 5
6 3 2 3 3 3 3 4 4 4 3 3 3 3 4 4 5 10 8 7 7 6 4 5 6 67 8 5 4 5 4 5
4 4 4 4 4 3 3 3 4 3 4 7 5 3 4 3 4 5 8 7 7 7 6 5 4 6 8 3 3 3
4 3 4 4 4 4 4 3 4 3 4 7 5 5 4 4 4 3 4 4 6 8 96 8 70 5 85 50 58 4 5 4 4
4 3 3 3 3 5 6 6 5 4 5 7 7 8 6 5 3 4 4 4 3 4 3 74 4 5 5

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
JANUARY 1996


0 0 0 0
1 1 2 2 2 4 3 3 3 1 2 3 9 10 3 3 1 1 0 0 0
1 2 1 1 1 1 1 1 1 2 2 4 4 8 9 11 3 1 2 1 2 1 0 2 2 3 4 3 0 0 0
1 2 2 1 2 1 1 0 2 4 4 6 6 6 11 6 1 0 0 0 1 1 1 1 1 1 1 1 1 0
0 1 2 2 2 2 1 2 2 8 11 7 5 5 2 0 0 1 0 0 0 0 1 0 0 0 1 3 6 1
2 4 3 1 1 1 2 11 8 7 3 2 4 3 2 1 0 1 0 0 1 1 1 3 2 4 8 10 13 12 3
0 1 1 1 0 0 2 4 3 2 1 1 1 2 0 0 2 1 0 0 0 2 2 3 4 4 5 7 3 1
0 1 1 1 2 3 3 21 18 6 1 0 1 3 1 2 3 4 2 0 0 2 4 5 3 3 2 3 4 0
1 1 0 1 2 3 9 25 42 38 12 2 1 1 1 1 1 3 2 0 0 0 3 4 2 2 1 1 0
1 2 1 1 1 2 2 3 5 7 3 1 1 1 2 2 2 2 2 1 1 1 1 0 3 4 3 2 1
0 1 1 1 1 1 1 1 1 1 1 2 2 1 2 2 3 4 4 2 1
0 1 0 0

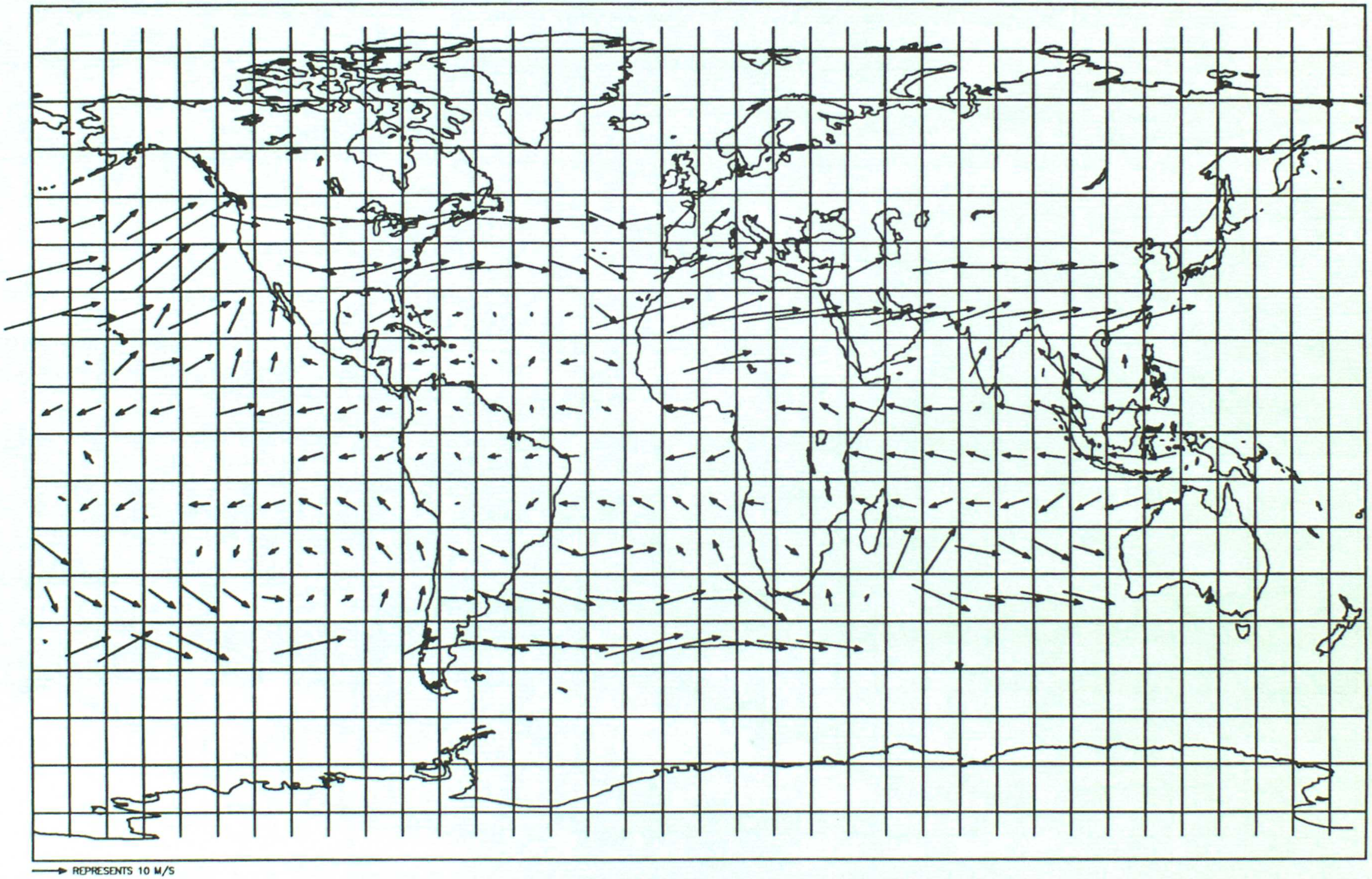
SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA

JANUARY 1996

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 16


REPRESENTS 10 M/S

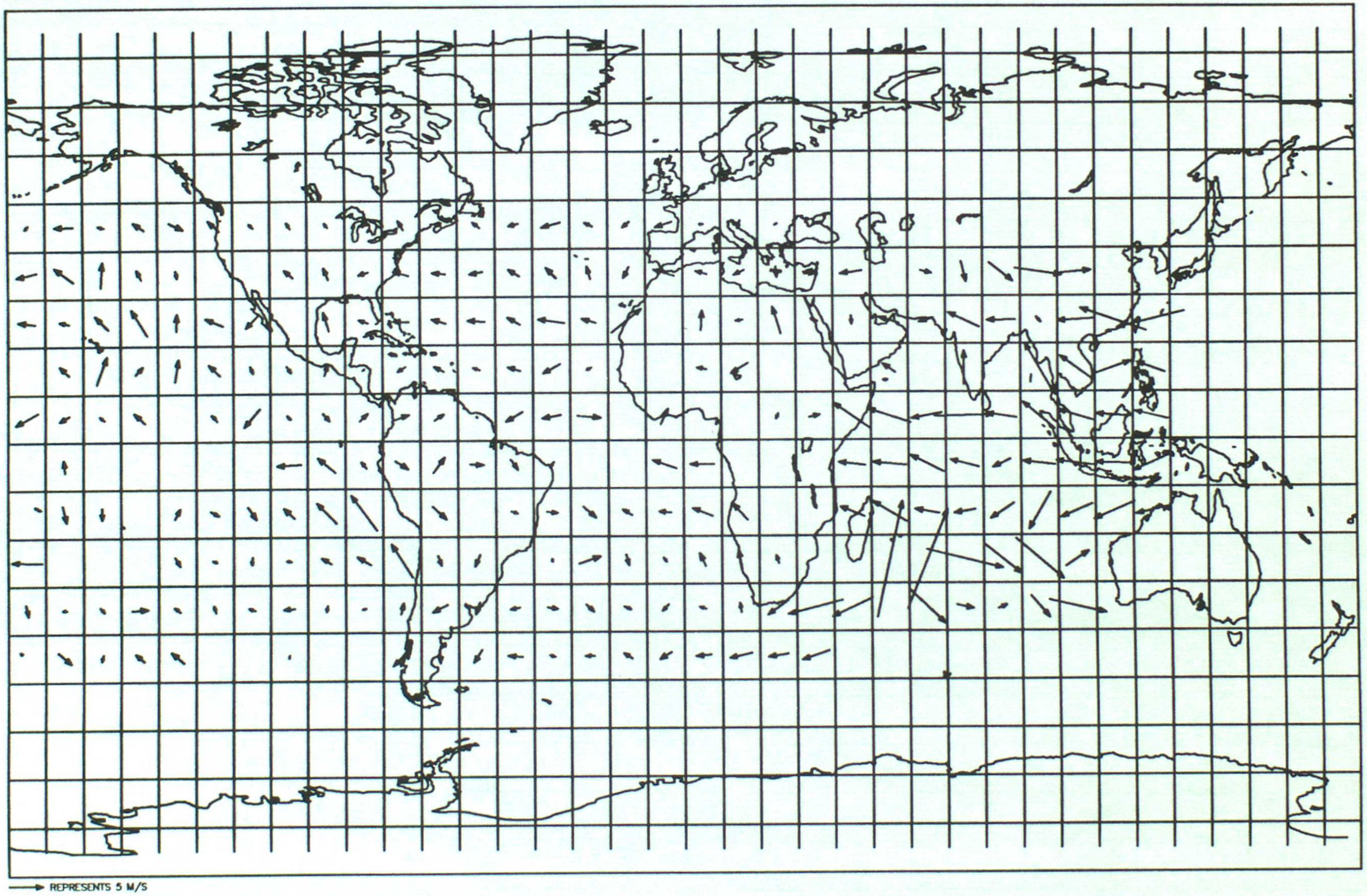
SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 401–700 HPA

JANUARY 1996

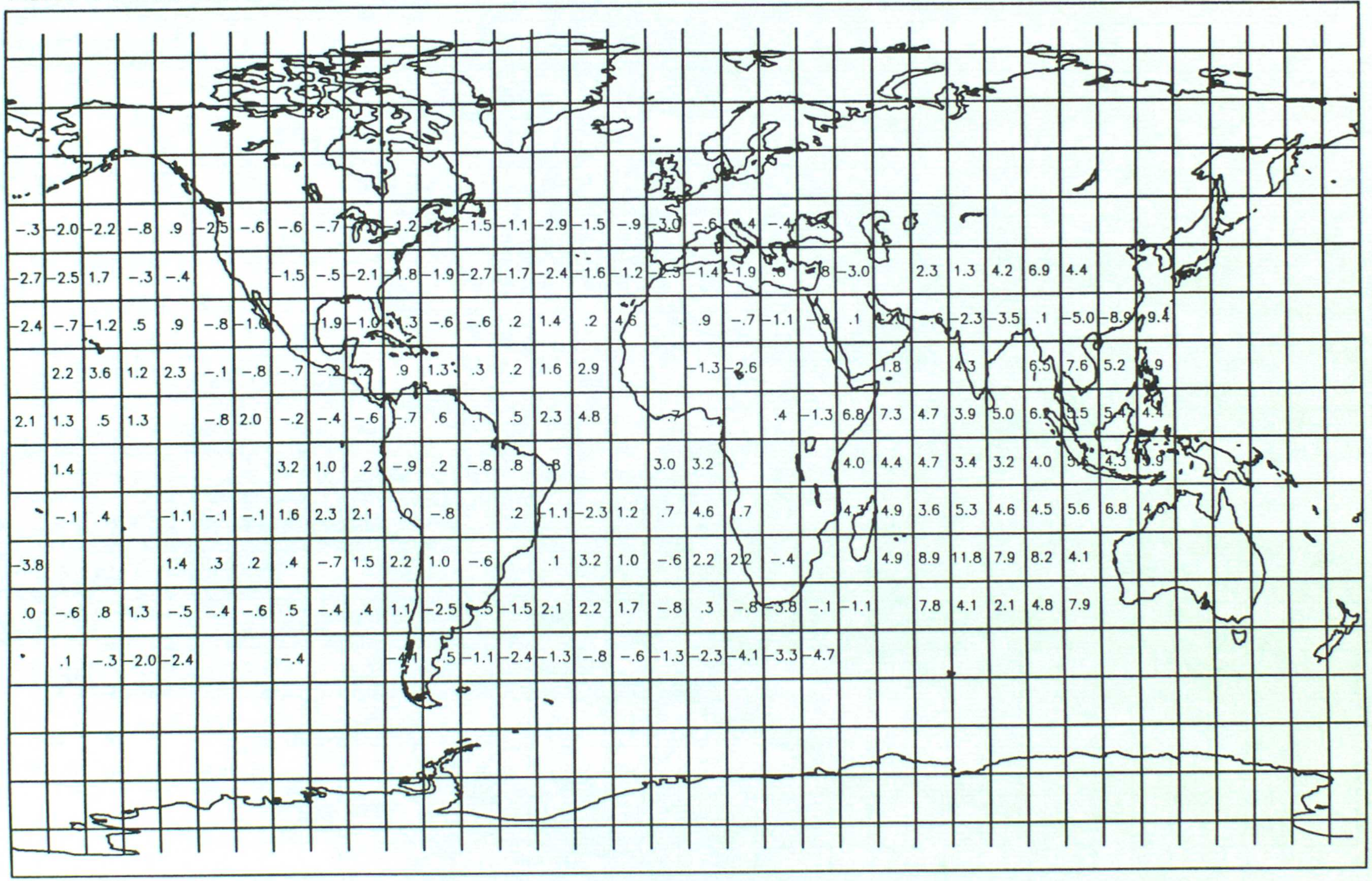
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

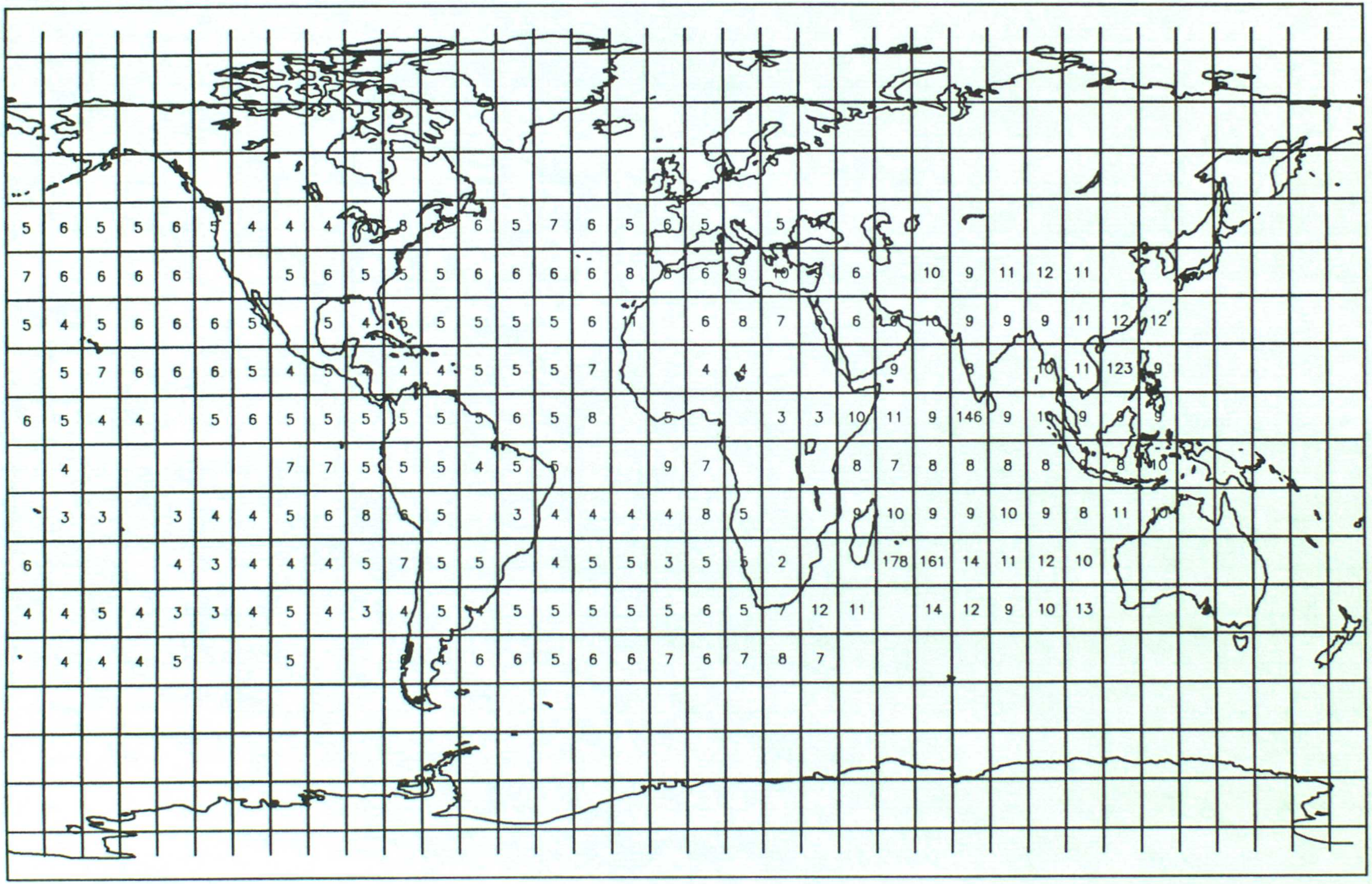
FIGURE 17



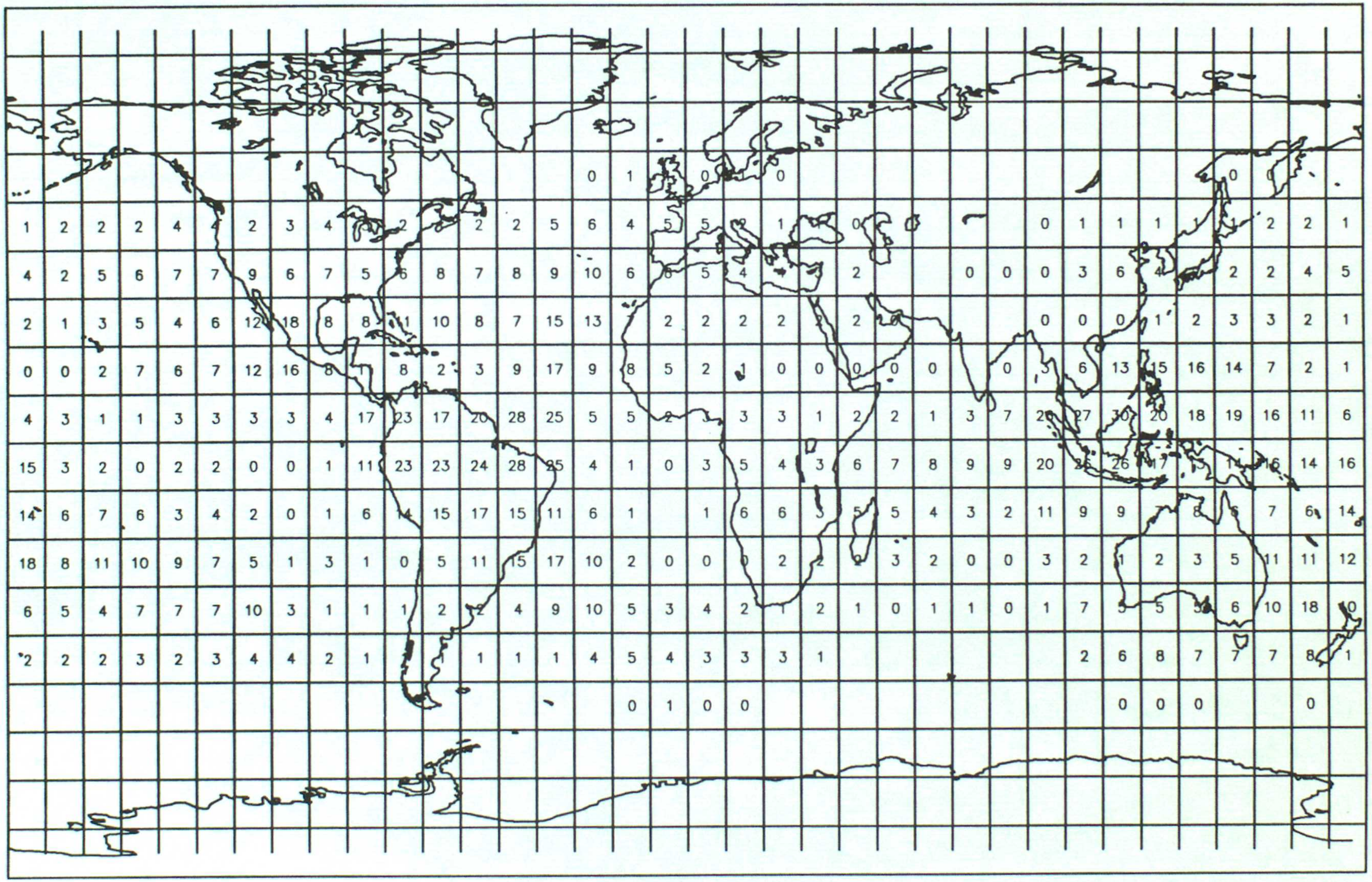
SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18
JANUARY 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-.3 -2.0 -2.2 -.8 .9 -2.5 -.6 -.6 -.7 -1.2 -1.5 -1.1 -2.9 -1.5 -.9 -3.0 -.6 .4 -.4
-2.7 -2.5 1.7 -.3 -.4 -1.5 -.5 -2.1 -1.8 -1.9 -2.7 -1.7 -2.4 -1.6 -1.2 -2.3 -1.4 -1.9 .6 -.8 -3.0 2.3 1.3 4.2 6.9 4.4
-2.4 -.7 -1.2 .5 .9 -.8 -1.6 -1.9 -1.0 -1.3 -.6 -.6 .2 1.4 .2 4.6 .9 -.7 -1.1 -.8 .1 4.2 .6 -2.3 -3.5 .1 -5.0 -8.9 9.4
2.2 3.6 1.2 2.3 -.1 -.8 -.7 -.2 .2 .9 1.3 .3 .2 1.6 2.9 -1.3 -2.6 1.8 4.3 6.5 7.6 5.2 4.9
2.1 1.3 .5 1.3 -.8 2.0 -.2 -.4 -.6 -.7 .6 .1 .5 2.3 4.8 .7 .4 -1.3 6.8 7.3 4.7 3.9 5.0 6.2 5.5 5.4 4.4
1.4 3.2 1.0 .2 -.9 .2 -.8 .8 .8 3.0 3.2 4.0 4.4 4.7 3.4 3.2 4.0 5.6 4.3 3.9
-.1 .4 -1.1 -.1 -.1 1.6 2.3 2.1 .0 -.8 .2 -1.1 -2.3 1.2 .7 4.6 .7 4.3 4.9 3.6 5.3 4.6 4.5 5.6 6.8 4.6
-3.8 1.4 .3 .2 .4 -.7 1.5 2.2 1.0 -.6 .1 3.2 1.0 -.6 2.2 2.2 -.4 4.9 8.9 11.8 7.9 8.2 4.1
.0 -.6 .8 1.3 -.5 -.4 -.6 .5 -.4 .4 1.1 -2.5 .5 -1.5 2.1 2.2 1.7 -.8 .3 -.8 -3.8 -.1 -1.1 7.8 4.1 2.1 4.8 7.9
.1 -.3 -2.0 -2.4 -.4 -4.1 .5 -1.1 -2.4 -1.3 -.8 -.6 -1.3 -2.3 -4.1 -3.3 -4.7

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19
JANUARY 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


5 6 5 5 6 5 4 4 4 8 6 5 7 6 5 6 5 4 5
7 6 6 6 6 5 6 5 5 5 6 6 6 6 8 8 6 9 10 6 10 9 11 12 11
5 4 5 6 6 6 5 5 4 5 5 5 5 5 6 11 6 8 7 6 10 10 9 9 9 11 12 12
5 7 6 6 6 5 4 5 4 4 4 5 5 5 7 4 4 9 8 10 11 123 9
6 5 4 4 5 6 5 5 5 5 5 5 6 5 8 5 3 3 10 11 9 146 9 10 9 8 9
4 7 7 5 5 5 4 5 5 9 7 8 7 8 8 8 8 8 10
3 3 3 4 4 5 6 8 6 5 3 4 4 4 4 8 5 9 10 9 9 10 9 8 11 10
6 4 3 4 4 4 5 7 5 5 4 5 5 3 5 5 2 178 161 14 11 12 10
4 4 5 4 3 3 4 5 4 3 4 5 4 5 5 5 5 5 6 5 7 12 11 14 12 9 10 13
4 4 4 5 5 8 4 6 6 5 6 6 7 6 7 8 7

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
JANUARY 1996


0 1 0 0 0 0
1 2 2 2 4 4 2 3 4 2 2 2 5 6 4 5 5 1 0 0 1 1 1 1 1 2 2 1
4 2 5 6 7 7 9 6 7 5 6 8 7 8 9 10 6 6 5 4 3 2 0 0 0 3 6 4 2 2 4 5
2 1 3 5 4 6 12 18 8 8 1 10 8 7 15 13 7 2 2 2 2 2 2 0 0 0 0 1 2 3 3 2 1
0 0 2 7 6 7 12 16 8 1 8 2 3 9 17 9 8 5 2 1 0 0 0 0 0 0 3 6 13 15 16 14 7 2 1
4 3 1 1 3 3 3 3 4 17 23 17 20 28 25 5 5 2 3 3 3 1 2 2 1 3 7 26 27 30 20 18 19 16 11 6
15 3 2 0 2 2 0 0 1 11 23 23 24 28 25 4 1 0 3 5 4 3 6 7 8 9 9 20 25 26 17 13 14 16 14 16
14 6 7 6 3 4 2 0 1 6 14 15 17 15 11 6 1 1 6 6 3 5 5 4 3 2 11 9 9 7 8 6 7 6 14
18 8 11 10 9 7 5 1 3 1 0 5 11 15 17 10 2 0 0 0 2 2 2 3 2 0 0 3 2 1 2 3 5 11 11 12
6 5 4 7 7 7 10 3 1 1 1 2 2 4 9 10 5 3 4 2 1 2 1 0 1 1 0 1 7 5 5 5 6 10 18 10
2 2 2 3 2 3 4 4 2 1 1 1 1 1 4 5 4 3 3 3 1 2 6 8 7 7 7 8 1
0 1 0 0 0 0 0 0

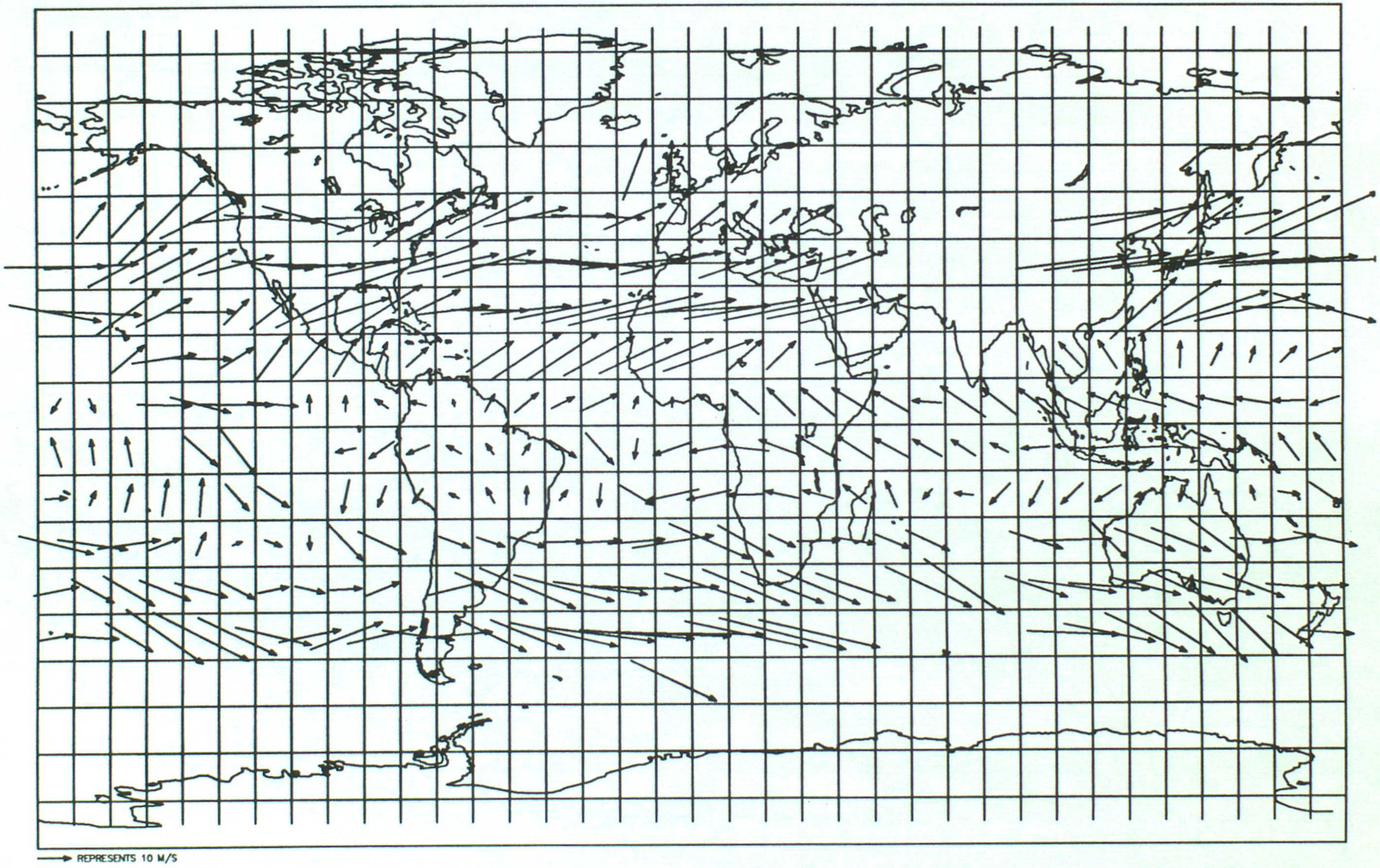
SATOB VECTOR MEAN WINDS BETWEEN 101–400 HPA

JANUARY 1996

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 21


REPRESENTS 10 M/S

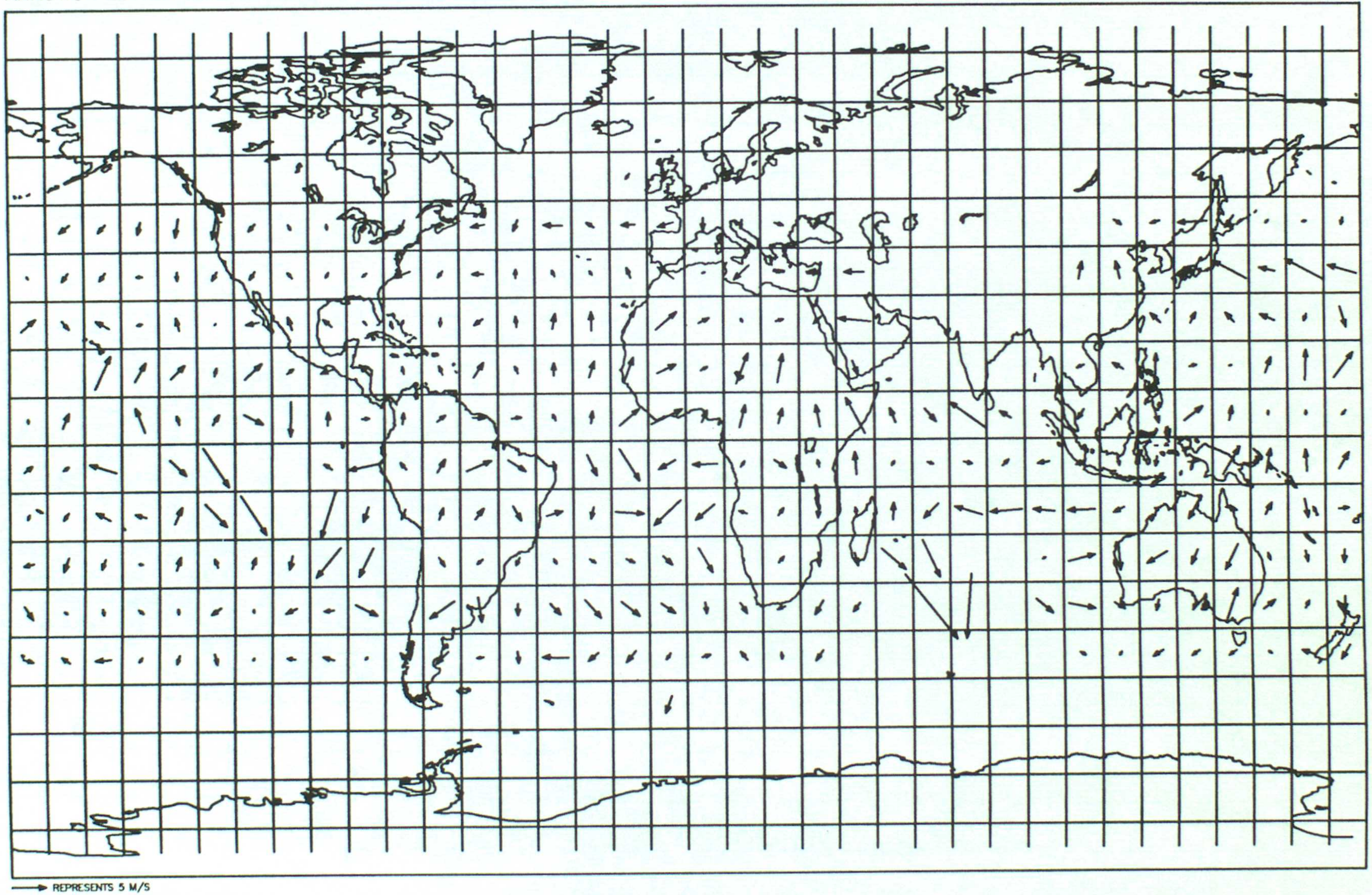
SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 101–400 HPA

FIGURE 22

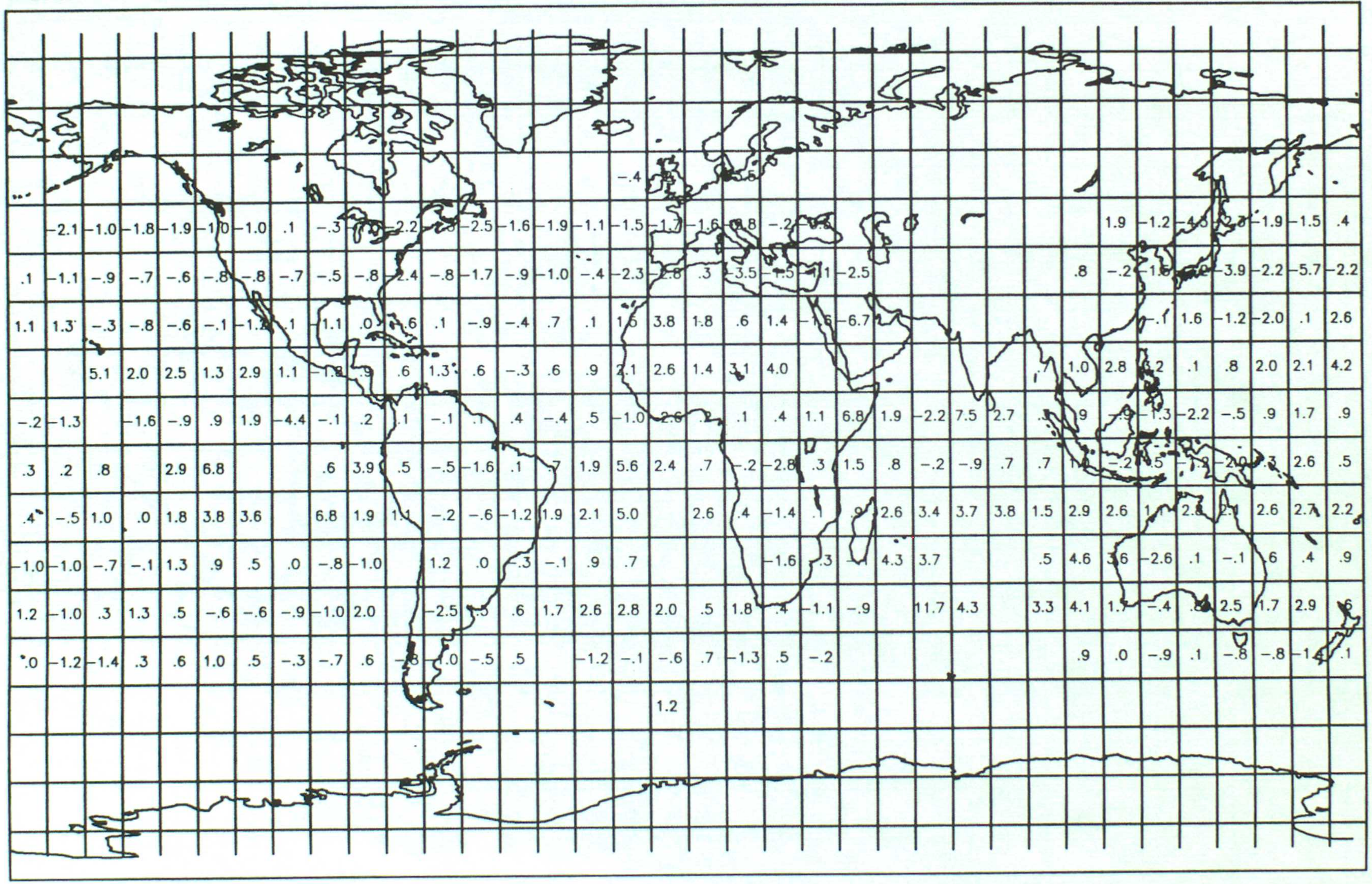
JANUARY 1996

ALL OBSERVATIONS

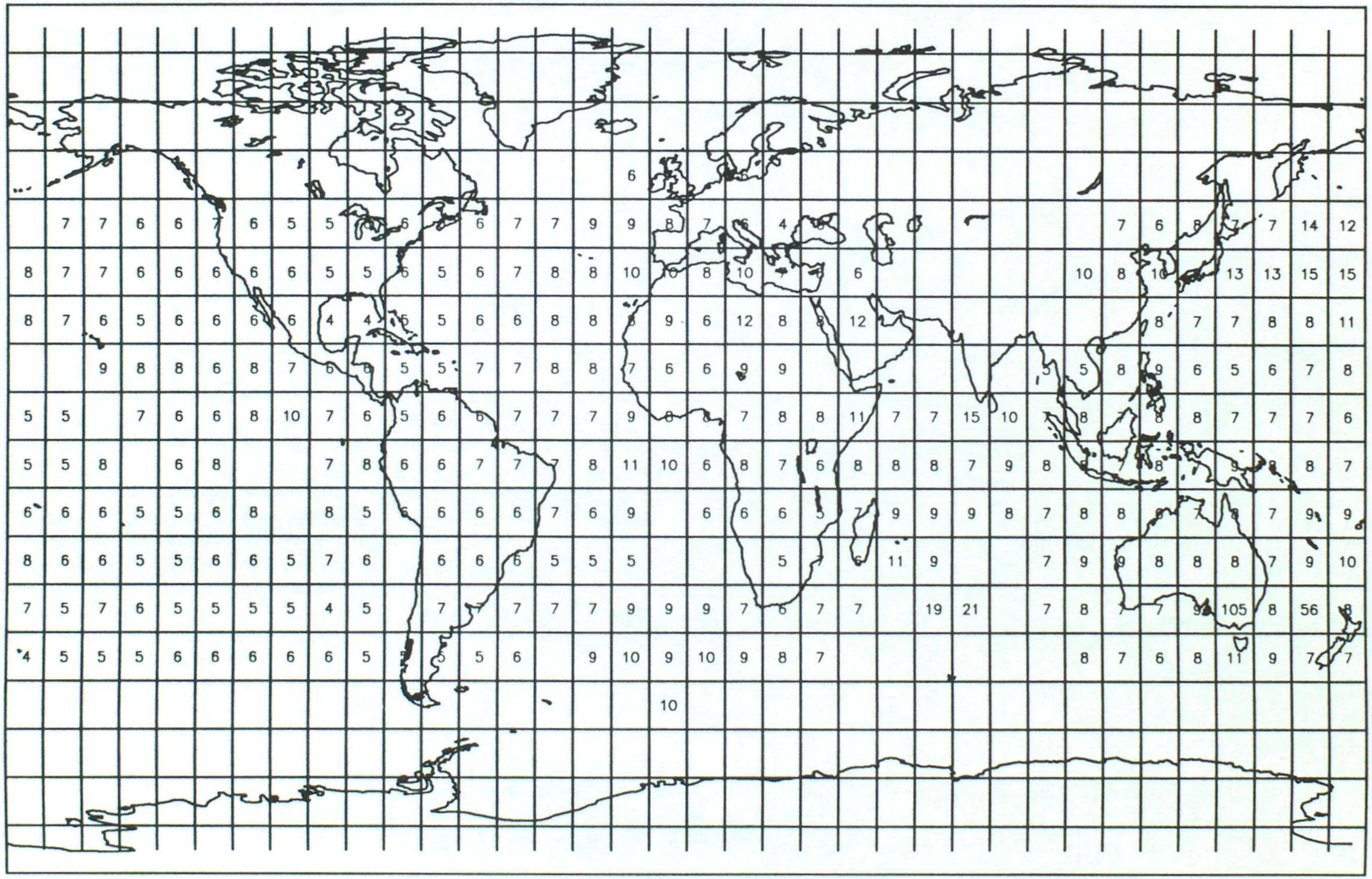
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT



SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
JANUARY 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-.4 .5
-2.1 -1.0 -1.8 -1.9 -1.0 -1.0 .1 -.3 -2.2 -2.5 -1.6 -1.9 -1.1 -1.5 -1.7 -1.6 .8 -.2 1.9 -1.2 -4.5 -1.9 -1.5 .4
.1 -1.1 -.9 -.7 -.6 -.8 -.8 -.7 -.5 -.8 -2.4 -.8 -1.7 -.9 -1.0 -.4 -2.3 -2.8 .3 -3.5 -1.5 -1.1 -2.5 .8 -.2 -1.6 -3.9 -2.2 -5.7 -2.2
1.1 1.3 -.3 -.8 -.6 -.1 -1.2 .1 1.1 .0 .6 .1 -.9 -.4 .7 .1 1.6 3.8 1.8 .6 1.4 -1.6 -6.7 -.1 1.6 -1.2 -2.0 .1 2.6
5.1 2.0 2.5 1.3 2.9 1.1 -1.8 .9 .6 1.3 .6 -.3 .6 .9 2.1 2.6 1.4 3.1 4.0 .7 1.0 2.8 .2 .1 .8 2.0 2.1 4.2
-.2 -1.3 -1.6 -.9 .9 1.9 -4.4 -.1 .2 .1 -.1 .1 .4 -.4 .5 -1.0 -2.6 .2 .1 .4 1.1 6.8 1.9 -2.2 7.5 2.7 .3 .9 -.9 -1.3 -2.2 -.5 .9 1.7 .9
.3 .2 .8 2.9 6.8 .6 3.9 .5 -.5 -1.6 .1 .7 1.9 5.6 2.4 .7 -.2 -2.8 .3 1.5 .8 -.2 -.9 .7 .7 1.0 -.2 .5 -1.2 -2.0 .3 2.6 .5
.4 -.5 1.0 .0 1.8 3.8 3.6 6.8 1.9 1.1 -.2 -.6 -1.2 1.9 2.1 5.0 2.6 .4 -1.4 .1 .9 2.6 3.4 3.7 3.8 1.5 2.9 2.6 1.1 2.8 2.1 2.6 2.7 2.2
-1.0 -1.0 -.7 -.1 1.3 .9 .5 .0 -.8 -1.0 1.2 .0 -.3 -.1 .9 .7 -1.6 .3 -.1 4.3 3.7 .5 4.6 3.6 -2.6 .1 -.1 .6 .4 .9
1.2 -1.0 .3 1.3 .5 -.6 -.6 -.9 -1.0 2.0 -2.5 .5 .6 1.7 2.6 2.8 2.0 .5 1.8 .4 -1.1 -.9 11.7 4.3 3.3 4.1 1.7 -.4 .8 2.5 1.7 2.9 .6
.0 -1.2 -1.4 .3 .6 1.0 .5 -.3 -.7 .6 -.8 -1.0 -.5 .5 -1.2 -.1 -.6 .7 -1.3 .5 -.2 .9 .0 -.9 .1 -.8 -.8 -1.4 .1
1.2

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
JANUARY 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


6
7 7 6 6 7 6 5 5 6 6 6 7 7 9 9 8 7 6 4 6 7 6 8 7 7 14 12
8 7 7 6 6 6 6 6 5 5 6 5 6 7 8 8 10 10 8 10 7 8 6 10 8 10 13 13 15 15
8 7 6 5 6 6 6 6 4 4 5 5 6 6 8 8 8 9 6 12 8 8 12 8 7 7 8 8 11
9 8 8 6 8 7 6 6 5 5 7 7 8 8 7 6 6 9 9 5 5 8 9 6 5 6 7 8
5 5 7 6 6 8 10 7 6 5 6 6 7 7 7 9 8 8 7 8 8 11 7 7 15 10 7 8 7 8 8 7 7 7 6
5 5 8 6 8 7 8 6 6 7 7 7 8 11 10 6 8 7 6 8 8 8 7 9 8 7 8 8 8 7
6 6 6 5 5 6 8 8 5 6 6 6 6 7 6 9 6 6 6 5 7 9 9 9 8 7 8 8 8 7 8 7 9 9
8 6 6 5 5 6 6 5 7 6 6 6 6 5 5 5 5 7 6 11 9 7 9 9 8 8 8 7 9 10
7 5 7 6 5 5 5 5 4 5 7 7 7 7 7 9 9 9 7 6 7 7 19 21 7 8 7 7 9 105 8 56 8
4 5 5 5 6 6 6 6 6 5 5 5 6 9 10 9 10 9 8 7 8 7 6 8 11 9 7 7
10

MONITORING OF SATELLITE TEMPERATURES

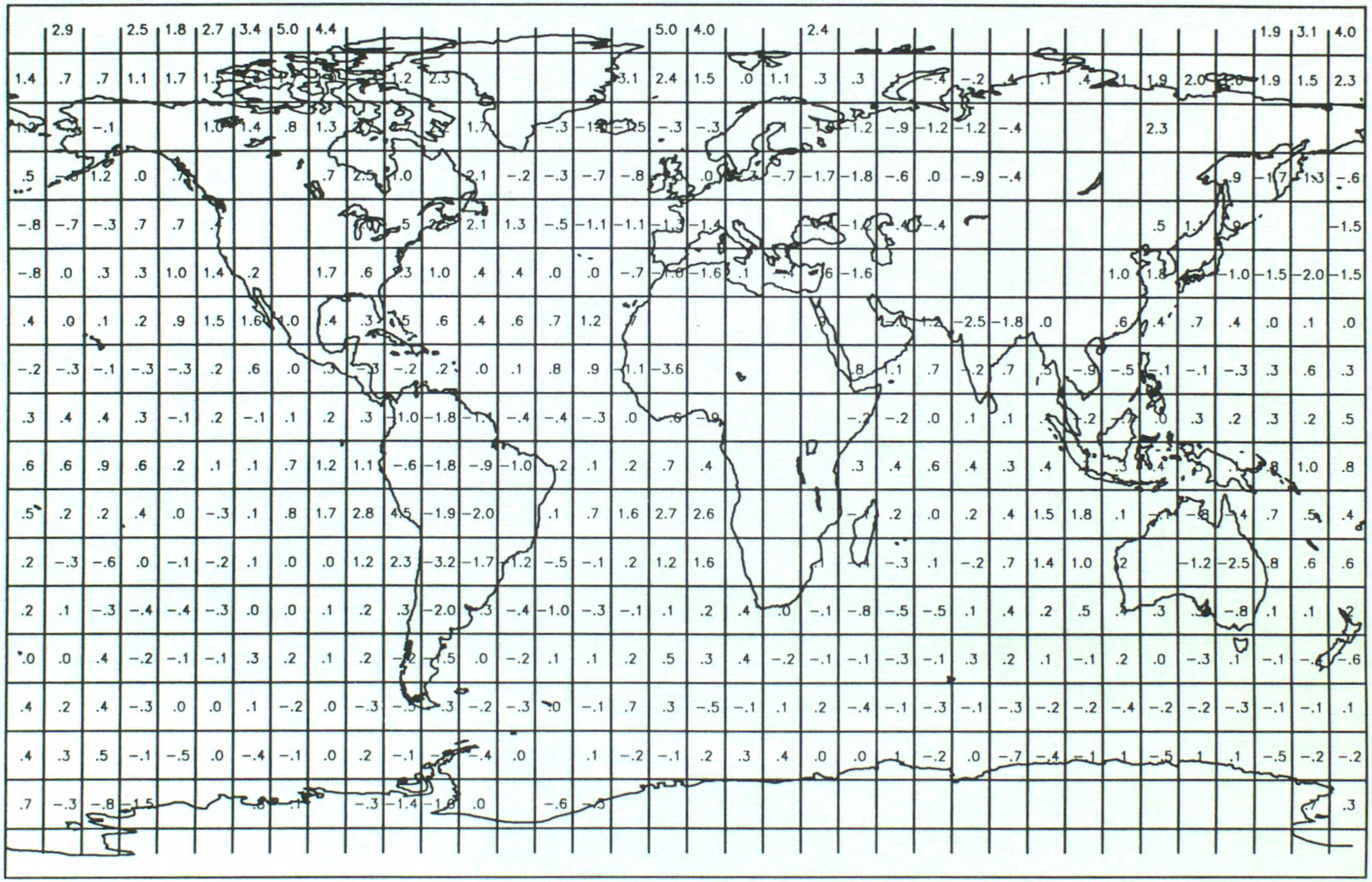
MONITORING CENTRE: BRACKNELL

MONTH: January, 1996

Monitoring procedures

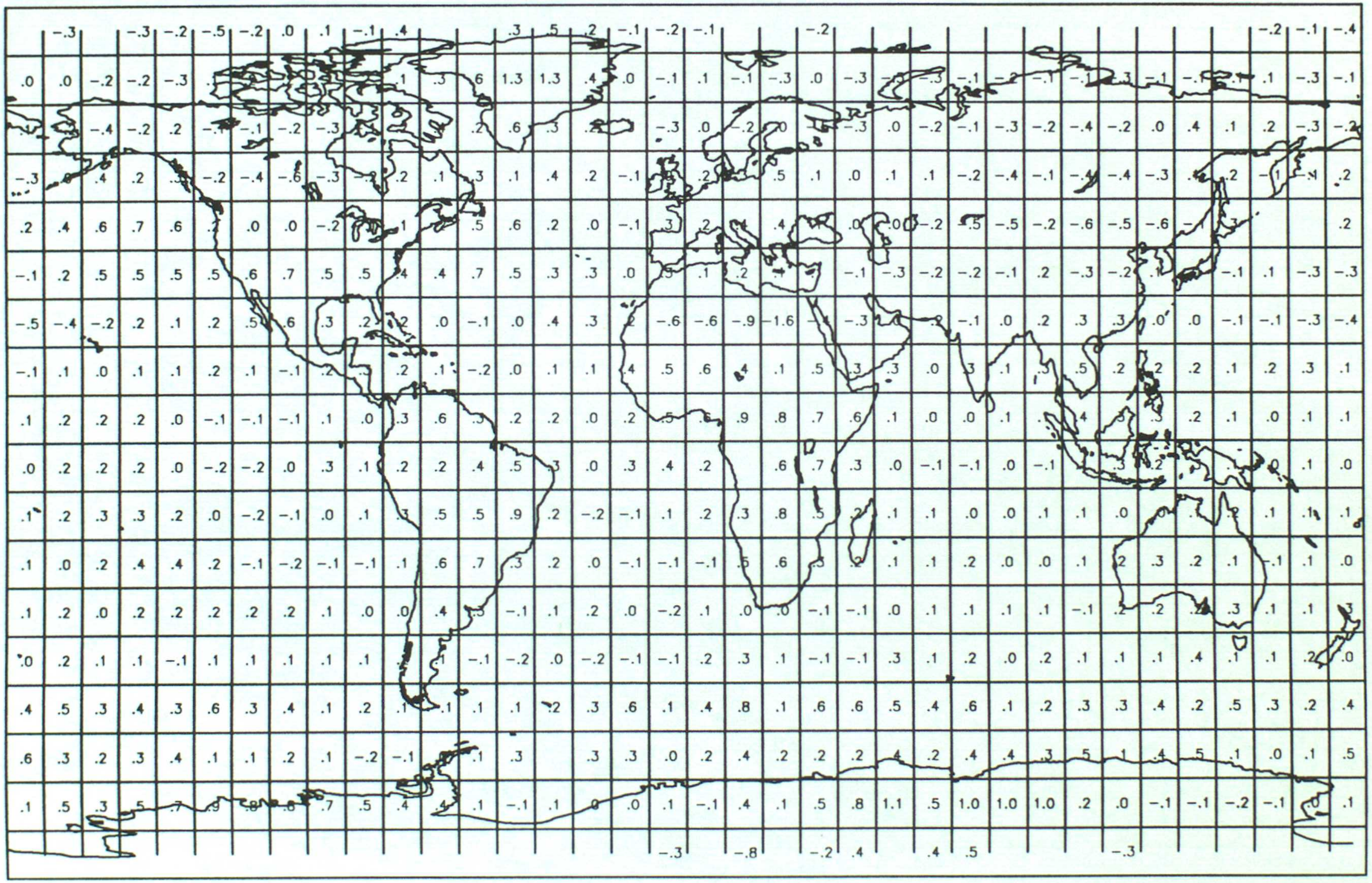
Period	:One calendar month.
Data monitored	:Reports from NOAA-12, NOAA-14 500 km.
Standard of comparison	:Background field from Bracknell global model.
Selection Criteria	:All SATEM soundings where number of observations > 30.
Data Extracted	:Layer: 850 - 1000 hPa 100 - 300 hPa 30 - 50 hPa :Mean observation minus background temperature differences

500 KM SATEMS : MEAN O−B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
JANUARY 1996
FIGURE 25
NOAA−12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT


2.9 2.5 1.8 2.7 3.4 5.0 4.4 5.0 4.0 2.4 1.9 3.1 4.0
1.4 .7 .7 1.1 1.7 1.5 1.2 2.3 3.1 2.4 1.5 .0 1.1 .3 .3 -.4 -.2 .4 .1 .4 .1 1.9 2.0 1.9 1.5 2.3
1.2 -.1 1.0 1.4 .8 1.3 1.7 -.3 -.3 -.3 -1.2 -.9 -1.2 -1.2 -.4 2.3
.5 1.2 .0 .7 2.5 1.0 2.1 -.2 -.3 -.7 -.8 .0 -.7 -1.7 -1.8 -.6 .0 -.9 -.4 .9 -1.7 1.3 -.6
-.8 -.7 -.3 .7 .7 .5 2.1 1.3 -.5 -1.1 -1.1 -1.3 -1.4 -1.2 -.4 -.4 .5 -1.5
-.8 .0 .3 .3 1.0 1.4 .2 1.7 .6 .3 1.0 .4 .4 .0 .0 -.7 -1.6 .1 -1.6 1.0 1.8 -1.0 -1.5 -2.0 -1.5
.4 .0 .1 .2 .9 1.5 1.6 1.0 .4 .3 .5 .6 .4 .6 .7 1.2 1.2 -2.5 -1.8 .0 .6 .4 .7 .4 .0 .1 .0
-.2 -.3 -.1 -.3 -.3 .2 .6 .0 .3 .3 -.2 .2 .0 .1 .8 .9 -1.1 -3.6 .8 1.1 .7 .2 .7 .5 -.9 -.5 -.1 -.1 -.3 .3 .6 .3
.3 .4 .4 .3 -.1 .2 -.1 .1 .2 .3 -1.0 -1.8 -.4 -.4 -.3 .0 -.9 -.2 -.2 .0 .1 .1 .2 .0 .3 .2 .3 .2 .5
.6 .6 .9 .6 .2 .1 .1 .7 1.2 1.1 -.6 -1.8 -.9 -1.0 .2 .1 .2 .7 .4 .3 .4 .6 .4 .3 .4 .8 1.0 .8
.5 .2 .2 .4 .0 -.3 .1 .8 1.7 2.8 4.5 -1.9 -2.0 .1 .7 1.6 2.7 2.6 .2 .0 .2 .4 1.5 1.8 .1 -.8 .4 .7 .5 .4
.2 -.3 -.6 .0 -.1 -.2 .1 .0 .0 1.2 2.3 -3.2 -1.7 1.2 -.5 -.1 .2 1.2 1.6 -.3 .1 -.2 .7 1.4 1.0 .2 -1.2 -2.5 .8 .6 .6
.2 .1 -.3 -.4 -.4 -.3 .0 .0 .1 .2 .3 -2.0 .3 -.4 -1.0 -.3 -.1 .1 .2 .4 .0 -.1 -.8 -.5 -.5 .1 .4 .2 .5 .3 -.8 .1 .1 .2
.0 .0 .4 -.2 -.1 -.1 .3 .2 .1 .2 .2 .5 .0 -.2 .1 .1 .2 .5 .3 .4 -.2 -.1 -.1 -.3 -.1 .3 .2 .1 -.1 .2 .0 -.3 .1 -.1 -.6
.4 .2 .4 -.3 .0 .0 .1 -.2 .0 -.3 -.3 .3 -.2 -.3 .0 -.1 .7 .3 -.5 -.1 .1 .2 -.4 -.1 -.3 -.1 -.3 -.2 -.2 -.4 -.2 -.2 -.3 -.1 -.1 .1
.4 .3 .5 -.1 -.5 .0 -.4 -.1 .0 .2 -.1 -.4 .0 .1 -.2 -.1 .2 .3 .4 .0 .0 .1 -.2 .0 -.7 -.4 -.1 .1 -.5 .1 .1 -.5 -.2 -.2
.7 -.3 -.8 -1.5 .8 .1 -.3 -1.4 -1.8 .0 -.6 -.5 .3

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
JANUARY 1996
NOAA–12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 26



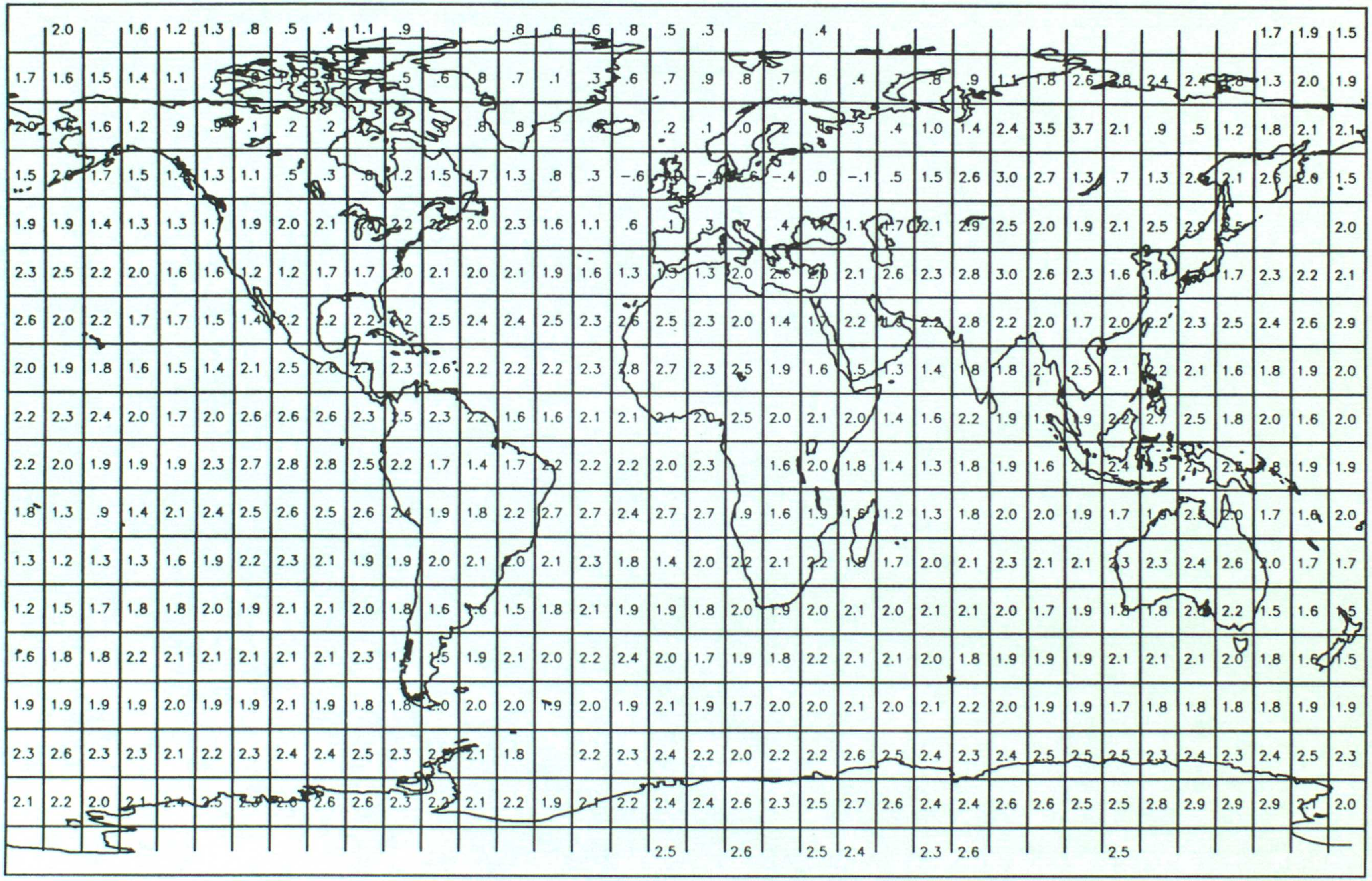
500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA

JANUARY 1996

FIGURE 27

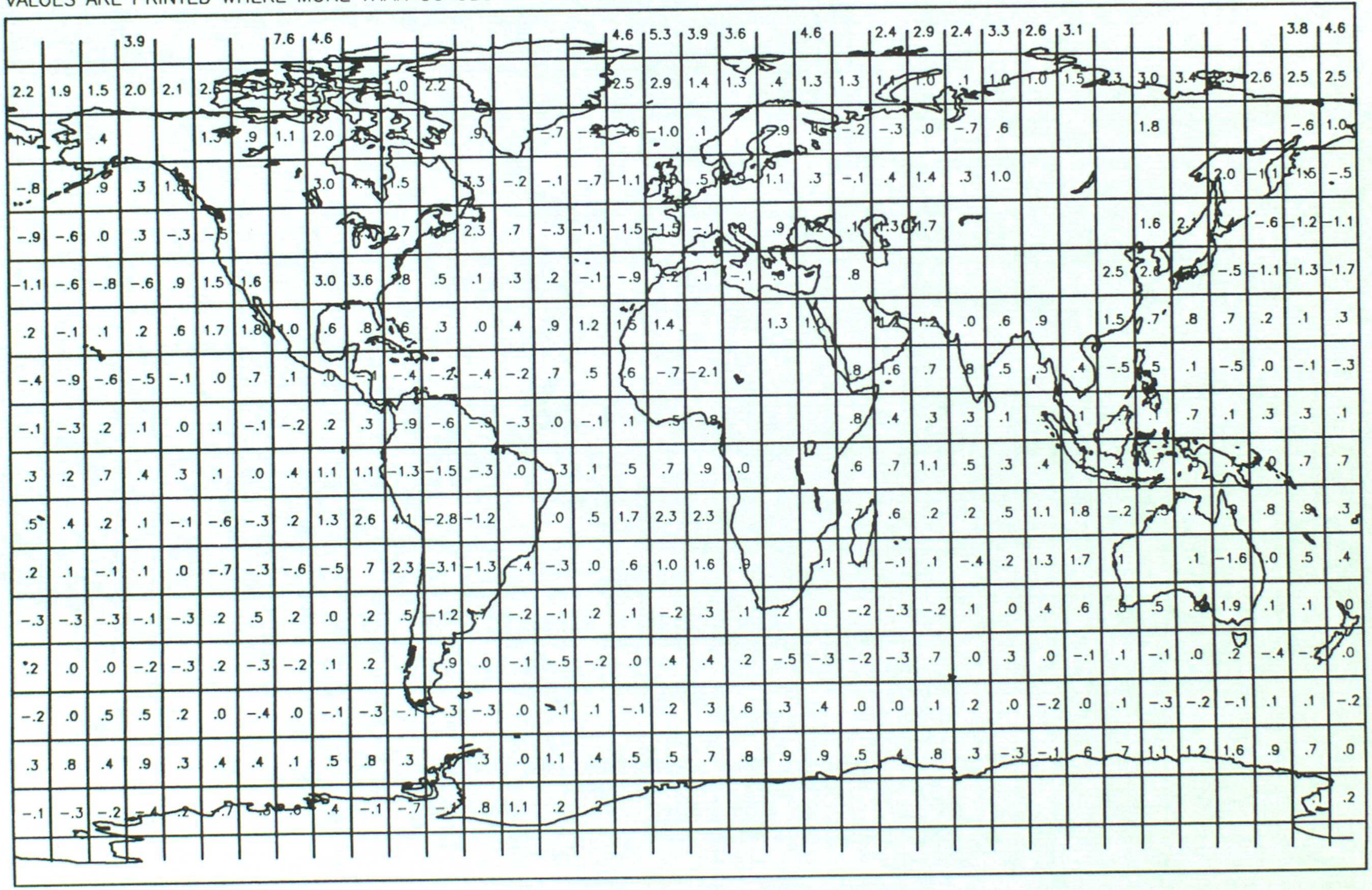
NOAA–12, USING ALL OBSERVATIONS

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

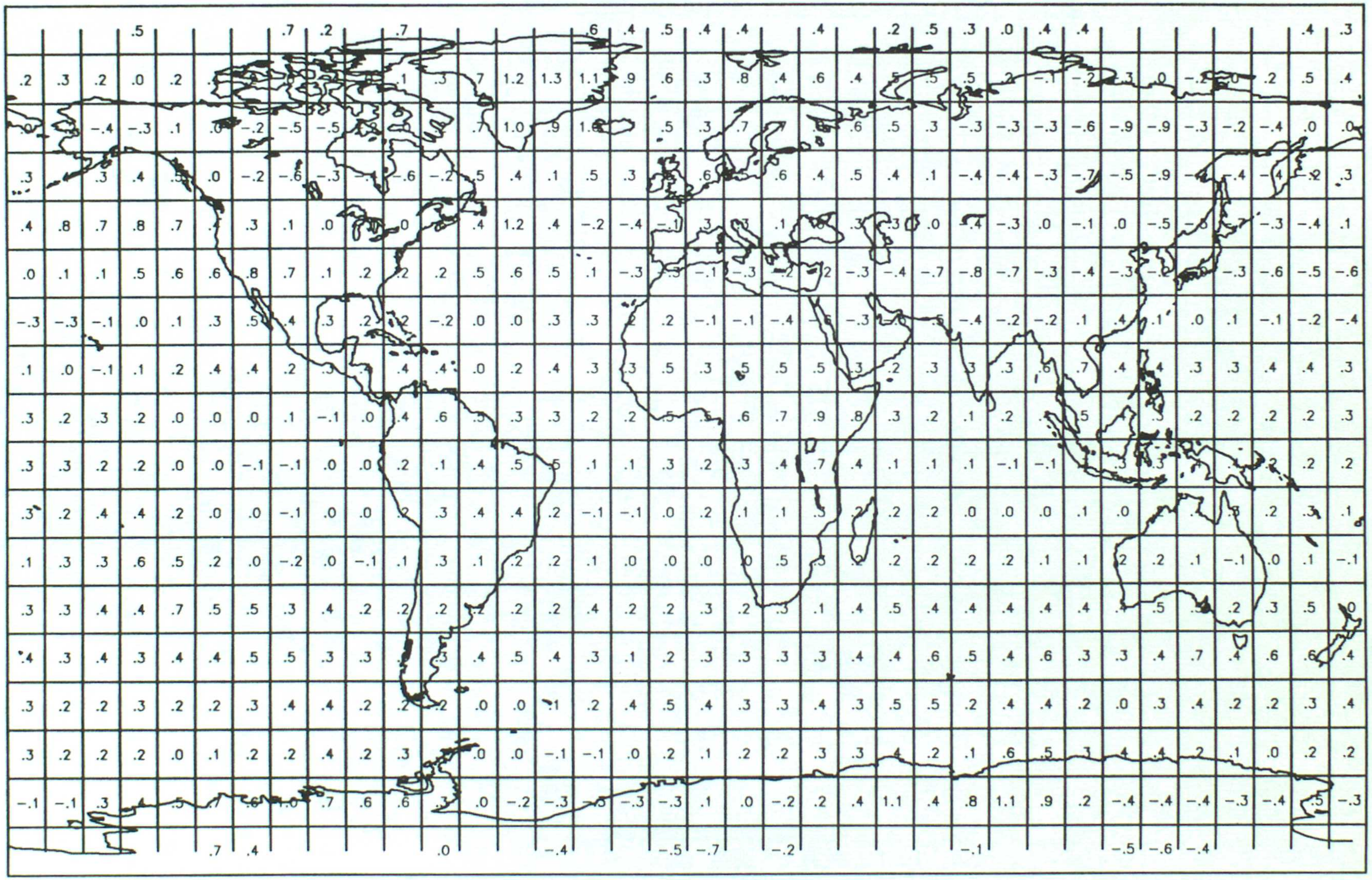

2.0 1.6 1.2 1.3 .8 .5 .4 1.1 .9 .8 .6 .6 .8 .5 .3 .4 1.7 1.9 1.5
1.7 1.6 1.5 1.4 1.1 .5 .6 .8 .7 .1 .3 .6 .7 .9 .8 .7 .6 .4 .8 .9 1.1 1.8 2.6 2.8 2.4 2.4 1.3 2.0 1.9
2.0 1.6 1.6 1.2 .9 .9 .1 .2 .2 .8 .8 .5 .6 .2 .1 .0 .2 .3 .4 1.0 1.4 2.4 3.5 3.7 2.1 .9 .5 1.2 1.8 2.1 2.1
1.5 2.0 1.7 1.5 1.4 1.3 1.1 .5 .3 .6 1.2 1.5 1.7 1.3 .8 .3 –.6 –.4 .0 –.1 .5 1.5 2.6 3.0 2.7 1.3 .7 1.3 2.6 2.1 2.5 2.0 1.5
1.9 1.9 1.4 1.3 1.3 1.7 1.9 2.0 2.1 2.0 2.2 2.2 2.0 2.3 1.6 1.1 .6 .1 .3 .7 .4 1.1 1.7 2.1 2.9 2.5 2.0 1.9 2.1 2.5 2.9 2.5 2.0
2.3 2.5 2.2 2.0 1.6 1.6 1.2 1.2 1.7 1.7 2.0 2.1 2.0 2.1 1.9 1.6 1.3 1.5 1.3 2.0 2.6 2.0 2.1 2.6 2.3 2.8 3.0 2.6 2.3 1.6 1.6 1.7 2.3 2.2 2.1
2.6 2.0 2.2 1.7 1.7 1.5 1.4 2.2 2.2 2.2 2.2 2.5 2.4 2.4 2.5 2.3 2.6 2.5 2.3 2.0 1.4 1.7 2.2 1.9 2.2 2.8 2.2 2.0 1.7 2.0 2.2 2.3 2.5 2.4 2.6 2.9
2.0 1.9 1.8 1.6 1.5 1.4 2.1 2.5 2.6 2.4 2.3 2.6 2.2 2.2 2.2 2.3 2.8 2.7 2.3 2.5 1.9 1.6 1.5 1.3 1.4 1.8 1.8 2.1 2.5 2.1 2.2 2.1 1.6 1.8 1.9 2.0
2.2 2.3 2.4 2.0 1.7 2.0 2.6 2.6 2.6 2.3 2.5 2.3 2.2 1.6 1.6 2.1 2.1 2.1 2.0 2.5 2.0 2.1 2.0 1.4 1.6 2.2 1.9 1.9 1.9 2.2 2.7 2.5 1.8 2.0 1.6 2.0
2.2 2.0 1.9 1.9 1.9 2.3 2.7 2.8 2.8 2.5 2.2 1.7 1.4 1.7 2.2 2.2 2.2 2.0 2.3 1.6 2.0 1.8 1.4 1.3 1.8 1.9 1.6 2.1 2.4 2.5 2.5 2.3 1.8 1.9 1.9
1.8 1.3 .9 1.4 2.1 2.4 2.5 2.6 2.5 2.6 2.4 1.9 1.8 2.2 2.7 2.7 2.4 2.7 2.7 1.9 1.6 1.9 1.6 1.2 1.3 1.8 2.0 2.0 1.9 1.7 1.9 2.5 2.0 1.7 1.6 2.0
1.3 1.2 1.3 1.3 1.6 1.9 2.2 2.3 2.1 1.9 1.9 2.0 2.1 2.0 2.1 2.3 1.8 1.4 2.0 2.2 2.1 2.2 1.8 1.7 2.0 2.1 2.3 2.1 2.1 2.3 2.3 2.4 2.6 2.0 1.7 1.7
1.2 1.5 1.7 1.8 1.8 2.0 1.9 2.1 2.1 2.0 1.8 1.6 1.6 1.5 1.8 2.1 1.9 1.9 1.8 2.0 1.9 2.0 2.1 2.0 2.1 2.1 2.0 1.7 1.9 1.8 1.8 2.0 2.2 1.5 1.6 1.5
1.6 1.8 1.8 2.2 2.1 2.1 2.1 2.1 2.1 2.3 1.5 1.5 1.9 2.1 2.0 2.2 2.4 2.0 1.7 1.9 1.8 2.2 2.1 2.1 2.0 1.8 1.9 1.9 1.9 2.1 2.1 2.1 2.0 1.8 1.6 1.5
1.9 1.9 1.9 1.9 2.0 1.9 1.9 2.1 1.9 1.8 1.8 2.0 2.0 2.0 1.9 2.0 1.9 2.1 1.9 1.7 2.0 2.0 2.1 2.0 2.1 2.2 2.0 1.9 1.9 1.7 1.8 1.8 1.8 1.8 1.9 1.9
2.3 2.6 2.3 2.3 2.1 2.2 2.3 2.4 2.4 2.5 2.3 2.2 2.1 1.8 2.2 2.3 2.4 2.2 2.0 2.2 2.2 2.6 2.5 2.4 2.3 2.4 2.5 2.5 2.5 2.3 2.4 2.3 2.4 2.5 2.3
2.1 2.2 2.0 2.1 2.4 2.5 2.3 2.6 2.6 2.6 2.3 2.2 2.1 2.2 1.9 2.1 2.2 2.4 2.4 2.6 2.3 2.5 2.7 2.6 2.4 2.4 2.6 2.6 2.5 2.5 2.8 2.9 2.9 2.9 2.1 2.0
2.5 2.6 2.5 2.4 2.3 2.6 2.5

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
JANUARY 1996
NOAA–14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 28


3.9 7.6 4.6 4.6 5.3 3.9 3.6 4.6 2.4 2.9 2.4 3.3 2.6 3.1 3.8 4.6
2.2 1.9 1.5 2.0 2.1 2.5 1.0 2.2 2.5 2.9 1.4 1.3 .4 1.3 1.3 1.1 1.0 .1 1.0 1.0 1.5 3.3 3.0 3.4 3.3 2.6 2.5 2.5
.4 1.3 .9 1.1 2.0 .9 -.7 -.6 -1.0 .1 .9 -.2 -.3 .0 -.7 .6 1.8 -.6 1.0
-.8 .9 .3 1.8 3.0 4.4 1.5 3.3 -.2 -.1 -.7 -1.1 .5 1.1 .3 -.1 .4 1.4 .3 1.0 2.0 -1.1 -1.5 -.5
-.9 -.6 .0 .3 -.3 -.5 2.7 2.3 .7 -.3 -1.1 -1.5 -1.5 -.1 .9 .1 1.3 1.7 1.6 2.1 -.6 -1.2 -1.1
-1.1 -.6 -.8 -.6 .9 1.5 1.6 3.0 3.6 .8 .5 .1 .3 .2 -.1 -.9 .1 -.1 .8 2.5 2.6 -.5 -1.1 -1.3 -1.7
.2 -.1 .1 .2 .6 1.7 1.8 1.0 .6 .8 .6 .3 .0 .4 .9 1.2 1.5 1.4 1.3 1.1 1.2 .0 .6 .9 1.5 .7 .8 .7 .2 .1 .3
-.4 -.9 -.6 -.5 -.1 .0 .7 .1 .0 -.1 -.4 -.2 -.4 -.2 .7 .5 .6 -.7 -2.1 .8 1.6 .7 .8 .5 .3 .4 -.5 .5 .1 -.5 .0 -.1 -.3
-.1 -.3 .2 .1 .0 .1 -.1 -.2 .2 .3 -.9 -.6 -.3 -.3 .0 -.1 .1 .5 -.8 .8 .4 .3 .3 .1 .1 .7 .1 .3 .3 .1
.3 .2 .7 .4 .3 .1 .0 .4 1.1 1.1 -1.3 -1.5 -.3 .0 .3 .1 .5 .7 .9 .0 .6 .7 1.1 .5 .3 .4 .4 .7 .0 .7 .7
.5 .4 .2 .1 -.1 -.6 -.3 .2 1.3 2.6 4.1 -2.8 -1.2 .0 .5 1.7 2.3 2.3 .7 .6 .2 .2 .5 1.1 1.8 -.2 -.3 .9 .8 .9 .3
.2 .1 -.1 .1 .0 -.7 -.3 -.6 -.5 .7 2.3 -3.1 -1.3 -.4 -.3 .0 .6 1.0 1.6 .9 .1 -.1 .1 -.4 .2 1.3 1.7 .1 .1 -1.6 .0 .5 .4
-.3 -.3 -.3 -.1 -.3 .2 .5 .2 .0 .2 .5 -1.2 -.7 -.2 -.1 .2 .1 -.2 .3 .1 .2 .0 -.2 -.3 -.2 .1 .0 .4 .6 .8 .5 .8 1.9 .1 .1 .0
.2 .0 .0 -.2 -.3 .2 -.3 -.2 .1 .2 .9 .0 -.1 -.5 -.2 .0 .4 .4 .2 -.5 -.3 -.2 -.3 .7 .0 .3 .0 -.1 .1 -.1 .0 .2 -.4 -.2 .0
-.2 .0 .5 .5 .2 .0 -.4 .0 -.1 -.3 -.1 .3 -.3 .0 .1 .1 -.1 .2 .3 .6 .3 .4 .0 .0 .1 .2 .0 -.2 .0 .1 -.3 -.2 -.1 .1 .1 -.2
.3 .8 .4 .9 .3 .4 .4 .1 .5 .8 .3 .3 .0 1.1 .4 .5 .5 .7 .8 .9 .9 .5 .4 .8 .3 -.3 -.1 .6 .7 1.1 1.2 1.6 .9 .7 .0
-.1 -.3 -.2 .4 .2 .7 .8 .6 .4 -.1 -.7 -.1 .8 1.1 .2 .2 .1 .2

500 KM SATEMS : MEAN O−B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
JANUARY 1996
FIGURE 29
NOAA−14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
JANUARY 1996
FIGURE 30
NOAA–14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

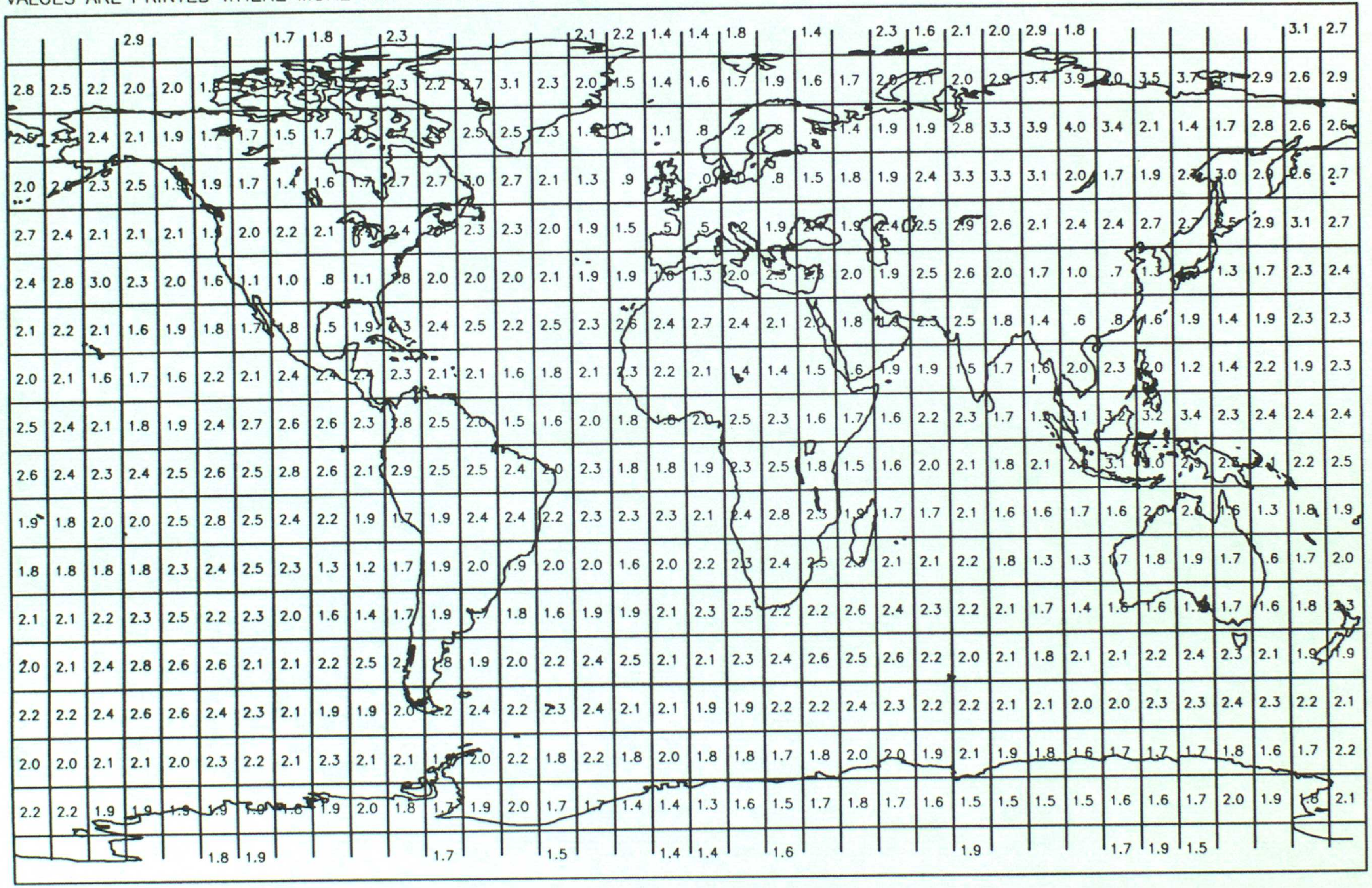


TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: January, 1996

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoy.

Area monitored :10°N - 80°N, 85°W - 0°W

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :All hours combined.

Elements monitored
:Mean sea-level pressure (hPa)
:Wind speed ($m\ s^{-1}$)
:Wind direction (degrees)

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. A positive bias indicates the observation is veered to the background

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors

GROSS ERROR LIMITS
:15 hPa (pressure)
:25 $m\ s^{-1}$ (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
25565	55.2	-44.2	ALL	MSLP	SUR	593	8	1	2.6	-0.5	2.7
29601	35.5	-56.8	ALL	MSLP	SUR	14	0	0	1.1	-0.7	1.3
39601	25.7	-49.7	ALL	MSLP	SUR	23	0	0	0.8	-0.4	0.9
40805	31.4	-14.8	ALL	MSLP	SUR	1	0	0	0.0	2.3	2.3
40808	43.2	-10.0	ALL	MSLP	SUR	4	0	0	1.1	1.8	2.1
40907	35.7	-13.1	ALL	MSLP	SUR	3	0	0	1.2	1.6	2.0
40909	15.0	-7.8	ALL	MSLP	SUR	3	1	33	0.4	1.3	1.4
41526	33.0	-61.0	ALL	MSLP	SUR	232	0	0	1.0	0.0	1.0
41529	22.1	-71.0	ALL	MSLP	SUR	218	0	0	0.9	0.0	0.9
41581	34.5	-65.1	ALL	MSLP	SUR	43	0	0	1.4	0.5	1.5
41585	36.7	-65.6	ALL	MSLP	SUR	253	0	0	1.3	-0.2	1.4
44613	47.3	-14.1	ALL	MSLP	SUR	1303	0	0	1.8	-0.3	1.8
44616	58.8	-32.0	ALL	MSLP	SUR	1702	6	0	2.0	0.7	2.1
44727	46.8	-29.1	ALL	MSLP	SUR	1294	3	0	1.9	-0.2	1.9
44728	58.1	-32.7	ALL	MSLP	SUR	1565	4	0	1.7	0.2	1.7
44742	58.7	-44.8	ALL	MSLP	SUR	944	2	0	1.5	-0.7	1.6
44760	28.9	-28.2	ALL	MSLP	SUR	482	1	0	1.4	-0.2	1.4
44761	55.2	-47.7	ALL	MSLP	SUR	819	0	0	1.9	0.2	1.9
44763	55.2	-42.3	ALL	MSLP	SUR	1545	1	0	1.7	0.1	1.7
44765	55.5	-32.8	ALL	MSLP	SUR	1467	4	0	1.9	-0.3	1.9
44769	54.1	-27.8	ALL	MSLP	SUR	1624	2	0	1.6	0.0	1.6
44770	31.6	-36.3	ALL	MSLP	SUR	727	2	0	1.1	-0.1	1.1
44773	51.1	-28.6	ALL	MSLP	SUR	1098	5	0	2.0	-0.1	2.0
44774	50.8	-47.2	ALL	MSLP	SUR	1366	3	0	1.9	0.0	1.9
44777	29.9	-28.9	ALL	MSLP	SUR	535	14	3	2.1	-0.2	2.1
62501	52.8	-20.3	ALL	MSLP	SUR	635	0	0	1.9	0.2	1.9
62503	45.6	-18.3	ALL	MSLP	SUR	554	0	0	2.0	0.0	2.0
62504	46.8	-15.0	ALL	MSLP	SUR	555	0	0	1.7	0.1	1.7
62518	41.5	-12.3	ALL	MSLP	SUR	564	0	0	1.4	-0.3	1.4
62694	61.4	-38.3	ALL	MSLP	SUR	1750	74	4	2.9	-0.6	3.0
63665	70.4	-18.2	ALL	MSLP	SUR	642	0	0	1.5	-0.3	1.5
65581	55.3	-31.4	ALL	MSLP	SUR	20	0	0	3.2	-0.3	3.2
65594	58.2	-43.8	ALL	MSLP	SUR	1669	3	0	1.8	-0.3	1.8
WIND SPEED											
29601	35.5	-56.8	ALL	SPEED	SUR	13	0	0	2.9	3.2	4.3
39601	25.7	-49.7	ALL	SPEED	SUR	23	0	0	1.8	2.5	3.0
40805	31.4	-14.8	ALL	SPEED	SUR	1	0	0	0.0	0.3	0.3
40808	43.2	-10.0	ALL	SPEED	SUR	5	0	0	1.3	1.9	2.3
40907	35.7	-13.1	ALL	SPEED	SUR	3	0	0	2.3	1.2	2.6
40909	15.0	-7.8	ALL	SPEED	SUR	3	1	33	0.6	5.9	5.9
41526	33.0	-61.0	ALL	SPEED	SUR	223	0	0	2.4	-2.8	3.7
41529	22.1	-71.0	ALL	SPEED	SUR	209	0	0	1.7	-2.8	3.3
41585	36.7	-65.6	ALL	SPEED	SUR	251	0	0	2.7	-1.7	3.2
44613	47.3	-14.1	ALL	SPEED	SUR	1290	0	0	3.1	-1.0	3.2
44616	58.8	-32.0	ALL	SPEED	SUR	222	0	0	4.9	-7.8	9.2
44742	58.7	-44.8	ALL	SPEED	SUR	934	1	0	4.6	-3.1	5.5
62501	52.8	-20.3	ALL	SPEED	SUR	616	0	0	2.3	0.8	2.4
62518	41.5	-12.3	ALL	SPEED	SUR	561	0	0	2.4	0.1	2.4
WIND DIRECTION											
29601	35.5	-56.8	ALL	DIRN.	SUR	13	0	0	10.6	-0.4	10.6
39601	25.7	-49.7	ALL	DIRN.	SUR	18	0	0	27.1	-5.1	27.5
40805	31.4	-14.8	ALL	DIRN.	SUR	1	0	0	0.0	-2.2	2.2
40808	43.2	-10.0	ALL	DIRN.	SUR	5	0	0	13.9	-3.3	14.3
40907	35.7	-13.1	ALL	DIRN.	SUR	3	0	0	7.1	-3.2	7.8
40909	15.0	-7.8	ALL	DIRN.	SUR	3	1	33	2.9	-9.6	10.1
41526	33.0	-61.0	ALL	DIRN.	SUR	184	0	0	15.9	5.7	16.9
41529	22.1	-71.0	ALL	DIRN.	SUR	185	0	0	25.1	19.7	31.9
41585	36.7	-65.6	ALL	DIRN.	SUR	239	0	0	60.3	-0.3	60.3
44613	47.3	-14.1	ALL	DIRN.	SUR	1158	0	0	24.8	-4.2	25.1

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND DIRECTION											
44616	58.8	-32.0	ALL	DIRN.	SUR	177	0	0	104.0	-38.3	110.8
44742	58.7	-44.8	ALL	DIRN.	SUR	888	1	0	21.1	-0.7	21.1
62501	52.8	-20.3	ALL	DIRN.	SUR	596	0	0	24.7	-13.0	27.9
62518	41.5	-12.3	ALL	DIRN.	SUR	448	0	0	24.1	-0.6	24.1

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: January, 1996

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in $m\ s^{-1}$

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 $m\ s^{-1}$ Vector Wind

SELECTION CRITERIA :N REP ≥ 20

			TEMPERATURE					WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	2895	0	1	1.9	0.0	2927	0	2	0	8.3	0.9
AAN	68	0	1	1.7	-0.7	67	0	4	0	10.5	-1.6
ACA	697	1	2	1.9	0.0	717	0	2	0	7.3	0.8
AEA	369	6	100	4.4	2.1	370	0	4	0	10.5	2.3
AEL	579	0	3	2.0	-0.1	598	0	4	0	10.1	1.3
AFL	118	2	100	2.6	1.3	121	0	5	1	10.0	1.3
AFR	842	1	5	2.0	-0.2	860	1	6	0	9.0	0.9
AIC	45	7	11	2.7	-1.5	43	0	9	0	12.2	2.9
AIH	59	0	2	1.6	-0.1	58	0	5	0	9.4	-0.2
ALW	20	0	5	1.2	-0.4	20	5	10	0	4.2	2.2
AMX	89	1	6	2.0	0.0	91	1	5	0	10.5	-0.1
AMY	107	0	1	2.1	-0.9	109	0	5	1	9.4	1.2
ANZ	202	1	2	2.0	-0.9	204	0	3	2	7.5	0.2
AOM	235	1	4	2.0	0.8	243	0	3	0	10.2	1.0
AUA	47	0	21	2.6	0.1	47	0	17	0	9.0	3.0
AVA	105	2	3	2.3	0.4	104	1	5	1	8.9	0.8
AZA	282	1	5	2.4	0.5	283	0	5	0	9.8	0.7
BAL	177	1	18	2.2	-0.4	188	0	17	0	10.0	1.2
BAW	1464	0	3	1.9	0.0	1473	0	4	0	8.5	1.3
BWA	130	0	7	2.5	1.2	134	0	7	0	10.8	1.9
CDN	656	0	1	1.7	0.4	666	0	3	1	8.3	0.6
CFG	553	1	3	2.3	-0.8	570	0	3	0	10.1	0.2
CKS	29	0	41	2.7	2.1	29	0	45	7	7.9	1.3
CKT	26	0	12	2.3	0.0	27	0	19	0	9.8	-2.5
CLX	93	1	2	1.9	-0.9	93	0	1	0	7.6	1.0
COA	305	0	4	2.3	0.4	307	0	4	1	9.6	1.1
CRL	162	1	4	2.8	0.5	170	0	5	1	10.4	2.1
CSA	31	0	0	1.6	-0.5	33	0	0	0	6.3	0.3
CTM	70	1	24	2.6	-1.9	71	0	25	0	8.7	1.6
CUB	182	1	100	2.3	1.1	189	1	100	1	12.2	2.4
DAF	24	0	0	1.8	-0.5	24	0	0	0	6.6	0.3
DAL	1860	0	1	1.9	0.5	1887	0	2	0	8.5	1.2
DHL	448	2	100	3.7	-1.7	448	0	2	0	8.4	0.5
DLH	2071	1	10	2.3	0.7	2107	0	11	2	8.2	1.0
DOA	118	1	18	2.3	0.5	114	3	21	0	10.7	1.2
EIA	45	0	13	2.2	-0.2	45	0	13	0	8.5	1.9
ELY	153	0	6	1.7	-0.4	157	0	9	0	8.4	2.1
FDX	478	0	3	1.9	0.5	482	0	3	0	8.4	1.4
FIN	442	0	4	1.9	0.5	438	0	4	1	8.4	0.9
GAF	40	3	3	1.8	-0.2	41	0	0	0	7.0	1.8
GFA	35	3	6	2.4	-0.2	37	0	3	0	6.1	0.4
GTI	47	0	2	2.4	-0.8	48	0	6	2	9.9	0.5
HLF	99	0	0	2.2	-1.2	100	0	0	0	10.1	2.8
IBE	957	1	21	2.3	0.1	963	0	22	0	10.8	0.9
ICE	399	0	1	1.7	0.1	402	0	2	1	7.3	0.4
JAL	21	0	10	1.6	0.3	21	0	10	0	6.1	-0.1
KLM	2103	0	2	2.0	0.3	2142	0	4	0	9.1	1.0
LDA	127	0	9	2.6	-1.3	128	0	9	0	8.7	1.6
LDI	203	1	26	2.3	-1.3	206	0	4	0	9.4	0.6
LIB	136	0	1	2.2	0.7	139	1	6	1	13.3	1.7
LOT	261	0	1	1.8	-0.6	264	0	1	0	7.9	0.9
LTU	487	0	2	1.9	0.1	485	0	3	0	8.9	1.4
MPH	577	0	3	2.3	-0.8	586	0	3	0	9.4	0.3
NUG	265	0	8	2.0	-1.5	265	0	8	3	9.4	1.3
NWA	2079	0	1	2.1	0.9	2117	0	3	1	8.9	0.9
OAL	45	0	0	2.4	1.8	49	0	4	0	13.6	1.2
RAM	22	0	5	3.4	0.9	21	0	0	0	11.1	0.6
RJA	46	0	0	1.8	0.1	47	0	2	0	9.3	1.0
RRR	93	0	22	2.5	-0.2	96	0	22	0	8.8	0.4

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
SAB	59	0	5	1.5	-0.4	61	0	5	0	7.7	2.3
SAS	888	0	1	1.7	-0.3	885	0	2	0	8.6	0.5
SIA	68	0	6	2.0	-0.9	70	0	4	0	8.1	-0.1
SJM	21	0	24	1.4	0.2	21	0	24	0	4.6	0.2
SPP	29	0	17	2.1	-0.3	26	0	19	0	12.9	0.9
SVA	116	0	6	2.4	-0.2	116	0	9	1	11.0	0.7
SWR	116	0	3	2.0	0.3	120	0	3	1	7.4	0.8
TAP	282	1	11	2.2	0.0	280	0	10	0	9.8	1.0
TEJ	38	0	16	1.5	0.2	38	0	16	0	8.3	0.1
TOW	56	0	4	2.0	0.3	59	0	10	0	12.1	2.5
TWA	1056	0	2	2.2	0.0	1061	0	2	0	9.0	1.2
UAL	1358	0	2	2.1	-0.7	1368	0	3	0	9.3	0.8
ULE	113	0	4	1.8	-0.2	110	0	5	0	8.9	1.8
UPS	492	1	17	1.8	0.3	501	0	18	0	8.1	0.7
USA	62	0	2	1.9	-0.5	61	0	2	0	7.7	0.7
VIA	118	1	6	1.9	0.9	122	0	9	2	9.3	0.5
VIR	147	1	3	1.9	-0.2	147	0	3	0	8.7	2.2
WOA	117	0	11	2.3	0.5	123	0	12	0	7.7	1.5
BA	8237	0	16	1.9	0.6	8230	0	43	0	7.8	1.4
KL	3951	0	16	1.8	0.5	3951	0	15	0	7.7	1.2
LH	158	0	22	1.8	0.3	151	0	24	1	8.7	0.5
MF	28	0	0	2.2	-0.1	30	0	0	0	5.3	1.2
M	153	5	100	3.2	0.1	156	0	100	0	14.1	3.3
N	199	2	6	2.9	0.8	210	0	8	0	10.3	0.7

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: January, 1996

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :100 hPa.

Element monitored :GEOPOTENTIAL HEIGHT in metres

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
EHOA	12	Z	100	10	0	12.6	35.3	33.0
FNOR	00	Z	100	11	0	39.5	46.2	23.9
FNOR	12	Z	100	12	0	11.9	29.4	26.9
FNOU	00	Z	100	6	0	7.9	205.3	205.2
FNOU	12	Z	100	4	0	12.5	187.2	186.7
FNPH	00	Z	100	1	0	0.0	57.0	57.0
FNPH	12	Z	100	1	0	0.0	17.0	17.0
FNRS	00	Z	100	10	0	16.4	25.3	19.3
FNRS	12	Z	100	13	0	16.0	18.4	9.0
GACA	00	Z	100	28	0	18.8	24.9	16.3
GACA	12	Z	100	29	0	15.0	19.9	13.0
JGQH	00	Z	100	1	0	0.0	68.0	68.0
JIVB	00	Z	100	1	0	0.0	41.0	41.0
LDWR	00	Z	100	28	0	12.8	20.3	15.8
LDWR	12	Z	100	29	0	10.4	19.5	16.5
OXYH2	00	Z	100	15	0	28.7	31.6	13.3
OXYH2	12	Z	100	12	0	15.9	20.2	12.4
SHIPAF	00	Z	100	13	1	25.9	34.3	22.4
SHIPAF	12	Z	100	9	0	10.4	57.9	57.0
V2EZ	00	Z	100	7	0	19.9	23.1	11.7
V2EZ	12	Z	100	8	0	24.3	27.9	13.6
V2GH	00	Z	100	9	0	19.2	27.3	19.4
V2GH	12	Z	100	16	0	19.0	19.0	1.3
V2LV	00	Z	100	29	0	16.3	17.7	6.8
V2LV	12	Z	100	27	0	17.5	17.8	3.3
V2LX	00	Z	100	1	0	0.0	25.0	25.0
V2LX	12	Z	100	1	0	0.0	34.0	34.0
WTEA	00	Z	100	1	0	0.0	42.0	42.0
03953	00	Z	100	30	0	21.6	24.3	11.1
03953	12	Z	100	31	0	15.4	21.9	15.6
04018	00	Z	100	30	0	18.0	31.0	25.2
04018	12	Z	100	30	0	24.0	37.8	29.2
04220	00	Z	100	30	0	14.4	16.5	8.0
04220	12	Z	100	31	0	13.1	15.3	7.9
04270	00	Z	100	26	0	23.3	30.7	20.1
04270	12	Z	100	25	0	26.1	30.0	14.7
04339	00	Z	100	28	0	19.1	23.4	13.6
04339	12	Z	100	30	0	17.8	19.3	7.5
04360	00	Z	100	29	0	17.6	22.9	14.7
04360	12	Z	100	27	0	18.7	22.5	12.5
08001	00	Z	100	27	0	23.3	23.7	4.8
08001	12	Z	100	28	0	22.3	22.7	-4.4
08508	00	Z	100	24	0	20.8	31.6	23.7
08508	12	Z	100	23	0	34.4	38.8	17.8
08594	12	Z	100	23	0	71.0	85.9	48.3
60020	00	Z	100	28	0	18.9	23.5	14.1
60020	12	Z	100	31	0	19.0	22.2	11.5
71600	00	Z	100	28	0	13.4	38.7	36.3
71600	12	Z	100	27	0	13.6	33.0	30.1
72201	00	Z	100	27	0	24.3	36.5	27.3
72201	12	Z	100	25	0	67.6	82.3	47.0
72402	00	Z	100	25	0	22.0	47.1	41.6
72402	12	Z	100	26	0	23.8	47.1	40.6
74494	00	Z	100	20	0	23.6	23.8	-3.5
74494	12	Z	100	24	0	22.1	23.0	-6.5
78016	12	Z	100	25	0	15.9	31.6	27.3

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: January, 1996

Monitoring procedures:

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :500 hPa.

Element monitored :GEOPOTENTIAL HEIGHT in metres

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
EHOA	12	Z	500	12	0	10.8	22.5	19.7
FNOR	00	Z	500	11	0	28.4	29.4	7.7
FNOR	12	Z	500	13	0	15.2	21.7	15.4
FNOU	00	Z	500	1	6	0.0	146.0	146.0
FNOU	12	Z	500	1	5	0.0	145.0	145.0
FNPH	00	Z	500	4	0	2.7	3.1	-1.5
FNPH	12	Z	500	3	0	8.5	10.6	-6.3
FNRS	00	Z	500	14	0	13.1	14.4	6.0
FNRS	12	Z	500	13	0	12.6	13.0	3.1
GACA	00	Z	500	28	0	13.1	13.3	1.8
GACA	12	Z	500	29	0	12.1	12.1	0.2
JGQH	00	Z	500	1	0	0.0	5.0	5.0
JIVB	00	Z	500	1	0	0.0	10.0	10.0
LDWR	00	Z	500	30	0	8.1	9.1	4.2
LDWR	12	Z	500	30	0	11.4	12.0	3.8
OXYH2	00	Z	500	16	0	18.0	18.3	-2.8
OXYH2	12	Z	500	13	0	13.4	13.5	-1.8
SHIPAF	00	Z	500	17	0	10.5	14.1	9.4
SHIPAF	12	Z	500	9	0	17.9	19.6	7.8
V2EZ	00	Z	500	7	0	16.8	19.6	-10.0
V2EZ	12	Z	500	8	0	12.9	15.3	-8.1
V2GH	00	Z	500	13	0	16.5	16.5	-0.6
V2GH	12	Z	500	19	0	17.6	17.7	-2.2
V2LV	00	Z	500	30	0	10.3	10.3	-0.3
V2LV	12	Z	500	28	0	7.0	7.9	-3.7
V2LX	00	Z	500	1	0	0.0	0.0	0.0
V2LX	12	Z	500	4	0	10.3	10.5	2.0
WTEA	00	Z	500	1	0	0.0	10.0	10.0
03953	00	Z	500	30	0	10.3	10.9	3.5
03953	12	Z	500	31	0	10.8	10.8	0.8
04018	00	Z	500	30	0	14.7	15.6	5.1
04018	12	Z	500	30	0	10.1	15.3	11.5
04220	00	Z	500	30	0	18.4	18.5	2.4
04220	12	Z	500	31	0	23.7	23.8	-2.4
04270	00	Z	500	28	0	18.7	18.7	-0.1
04270	12	Z	500	26	0	13.5	14.1	3.9
04339	00	Z	500	29	0	21.6	21.6	0.4
04339	12	Z	500	29	0	15.3	15.7	3.2
04360	00	Z	500	29	0	14.7	14.7	1.1
04360	12	Z	500	28	0	12.1	12.9	4.4
08001	00	Z	500	29	0	20.9	21.8	-6.1
08001	12	Z	500	30	0	22.8	27.7	-15.8
08508	00	Z	500	25	0	19.8	19.8	-0.4
08508	12	Z	500	25	0	19.9	19.9	0.5
08594	12	Z	500	23	1	19.4	19.4	-0.3
60020	00	Z	500	29	0	16.9	22.0	14.0
60020	12	Z	500	31	0	16.7	18.7	8.3
71600	00	Z	500	28	0	12.3	18.4	13.7
71600	12	Z	500	28	0	17.6	22.1	13.4
72201	00	Z	500	29	0	8.6	16.3	13.9
72201	12	Z	500	29	0	8.6	13.9	11.0
72402	00	Z	500	29	0	14.2	21.3	15.9
72402	12	Z	500	29	0	11.1	18.4	14.7
74494	00	Z	500	28	0	15.5	15.7	2.7
74494	12	Z	500	28	0	12.7	13.0	2.3
78016	12	Z	500	25	0	13.2	18.8	13.3

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: January, 1996

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in $m\ s^{-1}$
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
EHOA	12	V	100	11	0	0	2.6	-1.5	1.1
FNOR	00	V	100	11	0	0	3.8	-2.1	0.0
FNOR	12	V	100	12	0	0	4.3	-2.6	0.9
FNOU	00	V	100	6	0	0	5.0	1.6	0.3
FNOU	12	V	100	4	0	0	5.0	-0.8	4.4
FNPH	12	V	100	1	0	0	5.0	-0.1	-0.4
FNRS	00	V	100	10	0	0	5.0	-2.6	0.3
FNRS	12	V	100	13	0	7	6.5	-6.9	-0.5
GACA	00	V	100	27	0	0	6.9	0.8	0.7
GACA	12	V	100	29	0	0	3.3	0.4	-1.0
JGQH	00	V	100	1	0	0	2.4	-2.7	0.6
JIVB	00	V	100	1	0	0	2.4	0.9	2.9
LDWR	00	V	100	26	0	0	2.4	0.8	-1.8
LDWR	12	V	100	29	0	0	2.4	0.8	-1.6
OXYH2	00	V	100	15	0	0	3.6	-0.4	0.7
OXYH2	12	V	100	13	0	0	1.9	0.1	-0.2
SHIPAF	00	V	100	8	0	0	2.4	-2.9	1.6
SHIPAF	12	V	100	7	0	0	2.4	0.6	1.6
V2EZ	00	V	100	7	0	0	2.4	-3.5	0.5
V2EZ	12	V	100	8	0	0	2.4	-1.6	-1.1
V2GH	00	V	100	8	0	0	2.4	-1.5	-4.4
V2GH	12	V	100	16	0	0	2.4	-3.7	-1.3
V2LV	00	V	100	29	0	0	4.1	-3.0	-0.3
V2LV	12	V	100	26	0	0	5.4	-3.3	1.8
V2LX	00	V	100	1	0	0	6.4	-2.8	1.4
WTEA	00	V	100	1	0	0	6.4	-0.7	-0.5
03953	00	V	100	30	0	0	2.9	-0.1	-1.4
03953	12	V	100	31	0	0	2.8	-0.3	-1.4
04018	00	V	100	30	0	0	2.2	-0.1	-0.5
04018	12	V	100	30	0	0	2.5	-1.0	-0.2
04220	00	V	100	30	0	0	2.6	0.0	0.7
04220	12	V	100	30	0	0	2.7	0.0	-0.2
04270	00	V	100	26	0	0	2.5	-0.4	1.3
04270	12	V	100	25	0	0	4.4	-0.9	0.2
04339	00	V	100	28	0	0	3.5	0.0	-0.6
04339	12	V	100	29	0	0	3.2	-1.4	-0.9
04360	00	V	100	27	0	0	2.3	-0.7	1.1
04360	12	V	100	26	0	0	2.5	-1.2	0.1
08001	00	V	100	26	0	0	3.8	-0.4	-1.0
08001	12	V	100	27	0	0	3.4	-3.2	-1.8
08508	00	V	100	24	0	0	4.1	-0.8	0.5
08508	12	V	100	23	0	0	2.4	-2.8	0.7
08594	12	V	100	21	0	14	3.7	-8.4	-4.4
60020	00	V	100	28	0	0	3.1	2.4	0.3
60020	12	V	100	31	0	0	5.1	-1.2	0.4
71600	00	V	100	28	0	0	5.1	0.4	0.6
71600	12	V	100	26	0	0	3.8	-0.6	0.3
72201	00	V	100	25	0	0	3.3	0.6	-0.6
72201	12	V	100	24	0	8	4.3	-0.3	-0.1
72402	00	V	100	20	0	0	3.0	1.7	-0.2
72402	12	V	100	25	0	0	5.0	0.4	-0.5
74494	00	V	100	19	0	0	4.4	-2.1	2.1
74494	12	V	100	20	0	0	4.0	-3.8	2.2
78016	12	V	100	23	0	0	6.2	-1.1	1.9

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: January, 1996

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :500 hPa.

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period.

:UBIAS,VBIAS: Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
EHOA	12	V	500	12	0	0	3.0	-1.9	-1.1
FNOR	00	V	500	11	0	0	3.9	0.2	2.0
FNOR	12	V	500	13	0	0	3.2	0.1	3.5
FNOU	00	V	500	6	0	0	4.9	0.4	0.5
FNOU	12	V	500	6	0	0	4.9	-1.2	0.2
FNPH	00	V	500	4	0	0	4.9	1.1	-0.1
FNPH	12	V	500	2	0	0	4.9	-3.1	1.3
FNRS	00	V	500	14	0	0	4.9	0.4	0.6
FNRS	12	V	500	13	0	7	3.5	-4.8	-0.8
GACA	00	V	500	28	0	0	5.3	0.4	1.1
GACA	12	V	500	29	0	0	5.1	-1.8	0.6
JGQH	00	V	500	1	0	0	4.7	-2.2	1.9
JIVB	00	V	500	1	0	0	4.7	0.6	0.1
LDWR	00	V	500	30	0	0	4.7	1.0	0.4
LDWR	12	V	500	30	0	3	4.1	-0.1	0.4
OXYH2	00	V	500	16	0	0	2.8	-1.0	-0.7
OXYH2	12	V	500	13	0	0	3.2	-0.3	-1.8
SHIPAF	00	V	500	17	0	0	2.8	-1.5	0.9
SHIPAF	12	V	500	10	0	0	3.1	-0.8	0.8
V2EZ	00	V	500	7	0	0	2.6	3.4	-0.8
V2EZ	12	V	500	8	0	0	2.6	-0.2	-0.5
V2GH	00	V	500	13	0	0	2.6	0.4	-0.1
V2GH	12	V	500	18	0	0	3.6	-1.6	0.1
V2LV	00	V	500	30	0	0	3.1	1.4	0.8
V2LV	12	V	500	28	0	0	3.7	-0.9	0.3
V2LX	00	V	500	1	0	0	4.2	0.6	-4.2
V2LX	12	V	500	4	0	0	4.2	1.0	-1.7
WTEA	00	V	500	1	0	0	4.2	-0.7	-1.8
03953	00	V	500	30	0	0	3.6	0.8	-1.3
03953	12	V	500	31	0	0	2.8	-0.3	-0.3
04018	00	V	500	30	0	0	5.3	-0.8	0.6
04018	12	V	500	29	0	0	3.0	0.4	-0.8
04220	00	V	500	30	0	0	3.9	0.6	-0.5
04220	12	V	500	31	0	0	3.7	0.7	-0.9
04270	00	V	500	28	0	7	4.5	1.2	2.7
04270	12	V	500	25	0	0	7.1	1.0	-0.1
04339	00	V	500	27	0	0	4.8	0.9	0.9
04339	12	V	500	29	0	0	5.0	-1.3	-0.1
04360	00	V	500	29	0	0	4.6	2.8	0.0
04360	12	V	500	28	0	0	4.2	1.6	0.1
08001	00	V	500	29	0	0	4.3	-0.4	-1.2
08001	12	V	500	30	0	0	3.6	0.0	-0.5
08508	00	V	500	25	0	0	4.9	0.2	1.0
08508	12	V	500	25	0	0	3.5	-1.2	0.7
08594	12	V	500	23	0	17	3.8	-5.0	-4.5
60020	00	V	500	29	0	0	3.2	1.1	-0.3
60020	12	V	500	31	0	0	5.2	1.4	0.0
71600	00	V	500	28	0	0	4.1	-0.5	1.5
71600	12	V	500	27	0	0	3.6	1.0	1.0
72201	00	V	500	29	0	0	5.3	1.0	-0.6
72201	12	V	500	29	0	3	2.9	-0.4	-0.9
72402	00	V	500	28	0	0	3.4	0.1	1.6
72402	12	V	500	29	0	0	5.2	1.0	0.1
74494	00	V	500	28	0	0	5.1	-0.8	1.1
74494	12	V	500	28	0	0	4.1	-0.4	1.1
78016	12	V	500	25	0	0	3.2	2.1	1.3

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45